

Kennedy NASA Procedural Requirements

Effective Date: March 29, 2022

Expiration Date: March 29, 2027

Responsible Office: Spaceport Integration and Services

Kennedy Space Center Environmental Requirements

National Aeronautics and
Space Administration

John F. Kennedy Space Center

Change Log

Date	Revision	Description
2/20/14	C	<p>SIGNIFICANT CHANGES:</p> <ul style="list-style-type: none"> Scanned the entire document to remove any Space Shuttle Program-specific references or requirements. In Chapter 3, The National Environmental Policy Act Implementation, added hyperlinks to all KDPs and KSC Environmental Checklist form. In Chapter 4, Pollution Incident Reporting and Cleanup, updated the pollution incident reporting procedure. Clarified whether the NASA KSC EPA Waste ID Number is to be used on waste manifests when a NASA contractor or 3rd party (such as a fuel delivery company) is responsible/liable for remediating a spill. Added details of items needed from the organizations to document the pollution incident. Clarified reporting threshold for refrigerant system discharges. In Chapter 5, Spill Prevention, Control, and Countermeasures, clarified when a professional engineer certification is required for SPCC Plan changes. In Chapter 6, Air Compliance, updated the language pertaining to KSC deregistered Risk Management Plan. In Chapter 7, Water Conservation and Consumptive Use, removed water conservation from this chapter and combined with energy management in Chapter 28. In Chapter 8, Drinking Water, clarified the potable water line break reporting and sampling requirements, roles, and responsibilities. In Chapter 10, Stormwater, restructured the content into a more orderly sequence of requirements for permit coverage. In Chapter 11, Domestic Wastewater, clarified the domestic wastewater release reporting and cleanup requirements, roles, and responsibilities. In Chapter 13, Hazardous and Controlled Waste, rewrote, reorganized, and expanded text. Expanded and clarified the Hazardous Waste Disposal in Process (HWDIP) label use requirements and identified a maximum number of days for each step on the HWDIP label. Clarified the definition of "weekly inspections" for 90-day hazardous waste sites to ensure that inspections occur no more than seven calendar days apart. Ensured that inorganic zinc paint/primer aerosol can disposal requirements were consistent between sections. Discussed the new

		<p>web-based Waste Management System. Added a section for ordnance waste disposal requirements. Updated the flex hose section with the latest requirements/fact sheet text and referenced these requirements in Chapter 27.</p> <ul style="list-style-type: none"> • In Chapter 16, Blood Borne Pathogen and Exposure Control, eliminated text and referenced KSC-UG-1904, <i>NASA Employee Exposure Control Plan for Bloodborne Pathogens</i>. • In Chapter 17, Storage Tanks, removed duplicate language for secondary containment stormwater. • In Chapter 24, Natural Resources, updated Environmental Resource Permit (ERP) process for wetlands to mirror ERP process for stormwater. Provided links for wildlife management plans. • In Chapter 25, Cultural Resources, updated list of historic facilities. • In Chapter 26, Pollution Prevention, Solid Waste Diversion, Recycling, and Green Purchasing, corrected the painted concrete sampling and acceptance criteria for the Diverted Aggregate Reclamation and Collection Yard. Clarified which NASA and contractor organizations shall input the data into the NASA Environmental Tracking System. Clarified the implementation of the Recycling Program. Updated several Federal green purchasing web addresses. • In Chapter 27, clarified compressed gas cylinder disposal/recycling requirements.
7/21/2014	C-1	Added KSC-PLN-8553, Kennedy Space Center Sustainability Plan
7/27/2015	C-2	Administratively changed Center Operations to Spaceport Integration and Services due to recent re-organization
3/6/2017	D	<ul style="list-style-type: none"> • Updated document to reflect change in contract from Medical and Environmental Services Contract (MESC) to Kennedy Environmental and Medical Contract (KEMCON) • Updated document to reflect change for new EPA rule, Central Accumulation Area for 90-day to Central Accumulation Area/90-day. • In Chapter 3, The National Environmental Policy (NEPA) Act Implementation, revised requirement to resubmit KSC Environmental Checklist for projects not implemented within six months of issuance of the Record for Environmental Consideration. • In Chapter 4, added 4.6.6 For cleanups involving the release of Aqueous Film Fighting Foam (AFFF) cleanup shall be completed according to KSC-PLN-3008

		<ul style="list-style-type: none">• In Chapter 6, Air Compliance, clarified reporting requirements for potential to emit calculations for new emission sources and the maintenance of site specific monitoring plans.• In Chapter 7, Water Consumptive Use, removed the consumptive use permit requirements since we no longer have that permit, removed the references to regulatory agency forms, and streamlined the description of the processes to obtain an environmental permit. (Added water conservation goals – moved to Chapter 28)• In Chapter 8, Drinking Water, removed the references to regulatory agency forms, removed references to specific contractors, streamlined the description of processes to obtain an environmental permit, and defined the roles and responsibilities of KSC organizations operating the water system and providing sampling support. Transitioned the permit application fee payment responsibility from Environmental Office to initiating organization or contractor.• In Chapter 9, National Pollutant Discharge Elimination System, added from Chapter 10 the specifics of each NPDES permit program, removed the references to regulatory agency forms, and streamlined the description of the processes to obtain an environmental permit. Transitioned the permit application fee payment responsibility from Environmental Office to initiating organization or contractor.• In Chapter 10, Stormwater, removed sections detailing the NPDES program requirements and moved them to Chapter 9, removed the references to regulatory agency forms, streamlined the description of processes to obtain an Environmental Resource Permit, and removed references to the Total Maximum Daily Load (TMDL) program. Transitioned the permit application fee payment responsibility from Environmental Office to initiating organization or contractor.• In Chapter 11, Domestic Wastewater, removed the references to regulatory agency forms, removed references to specific contractors, streamlined the description of processes to obtain an environmental permit, and defined the roles and responsibilities of KSC organizations operating the wastewater system. Transitioned the permit application fee payment responsibility from Environmental Office to initiating organization or contractor.
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		<ul style="list-style-type: none">• In Chapter 12, Industrial Wastewater, removed the references to regulatory agency forms, removed references to specific contractors, streamlined the description of processes to obtain an environmental permit, added language to define the industrial wastewater evaluation process, and defined the roles and responsibilities of NASA and KSC organizations. Transitioned the permit application fee payment responsibility from Environmental Office to initiating organization or contractor.• In Chapter 13, Hazardous and Controlled Waste, provided clarification on who needs training to manage 90-Day hazardous waste storage areas and satellite accumulation areas (SAA), established same container labeling requirements for 90-Day and SAA locations, clarified labeling requirements of empty containers to be picked up for recycling, and affirmed KSC policy to manage universal pharmaceutical waste under full range of hazardous waste regulations instead of state of Florida rules.• In Chapter 17, Storage Tanks, removed ambiguity between petroleum and non-petroleum storage tanks.• In Chapter 18, Pesticides, changed the recordkeeping requirements for pesticide applications.• In Chapter 19, PCB Management, added requirements for temporary storage of PCB items.• In Chapter 23, Emergency Planning and Community Right-to-Know Act, changed the reporting requirements for covered chemicals for which the Occupational Safety and Health Administration requires a safety data sheet.• In Chapter 24, Natural Resources, added short descriptions of management plans for gopher tortoise, osprey, terns and skimmers, and exterior lighting, and added descriptions of the Florida Scrub-Jay Compensation Plan and the Advanced Ecological Mitigation Plan.• In Chapter 25, Cultural Resources, expanded the descriptions of regulatory requirements, added to the list of Federal and state regulations and executive orders, expanded the requirements for controls, and added mitigation measures.• In Chapter 26, Pollution Prevention, Solid Waste Diversion, Recycling, and Green Purchasing, clarified the definitions of items for recycling and non-recyclable materials, and expanded Green Purchasing to now include Sustainable Acquisition.• In Chapter 28, Energy and Water Management, added water conservation goals and requirements, and clarified the use of utility rebates.
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3/3/2022	D-1	<ul style="list-style-type: none"> • Expiration date extended to allow for executive management review and concurrence of Rev. E.
3/29/2022	E	<ul style="list-style-type: none"> • Table of Contents updated. • P.3 Updated hyperlinks and formatting. • P.4 Updated hyperlinks and formatting. • In P.4, replaced Executive Order (EO) 13893 Planning for Federal Sustainability in the Next Decade with EO 13990 Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis and EO 14008 Tackling the Climate Crisis at Home and Abroad • In Chapter 2, updated language in accordance with new EO 13834. • In Chapter 2, Section 2, updated section by removing “references to specific EOs and added language to ensure compliance with the current sustainability-related EOs to eliminate future revisions associated with new EOs. • In Chapter 2, Section 2.2- Principal Center for Recycling and Sustainable Acquisition removed. All numbering adjusted. • In Chapter 2, Section 2.1, updated section by removing “references to specific EOs and added language to ensure compliance with the current sustainability-related EOs to eliminate future revisions associated with new EOs and added specific timeline for accuracy regarding management reviews and declaration of conformance. • In Chapter 2, Section 3.5 updated section by removing “references to specific EOs and added language to ensure compliance with the current sustainability-related EOs to eliminate future revisions associated with new EOs • In Chapter 3, Section 1.7, added language to clarify the requirements for performing environmental studies. • In Chapter 13, overall chapter was rearranged (Sections 13.2 and 13.3 were moved below 13.6) to improve the flow and readability of the hazardous waste process and to incorporate the new EPA generator rules adopted by the State of Florida in June 2018. • In Chapter 13, updated information on the SAA and CAA with the EPA generator improvement rules that the CAA and SAA hazardous waste storage areas shall meet 40 CFR 262 Subpart M—Preparedness, Prevention, and Emergency Procedures for Large Quantity Generators. Identified the official database for all waste activities is through WMS and the waste

		<p>site module. This includes CAA weekly inspections and waste site inventory.</p> <ul style="list-style-type: none">• In Chapter 19, Table D, added additional language to clarify that PCBs <0.5 ppm may preclude some reuse scenarios. Also added language to 19.2.9 and 19.2.10 to allow contractors to accept certain electrical equipment in exchange for offsetting project costs.• In Chapter 24, Natural Resources, added requirements for operations-related impacts to the Gopher Tortoise, Osprey, and rooftop nesting birds. Also, added the Exterior Lighting Requirements, and information of the Florida Scrub Jay Biological Opinion.• In Chapter 26, updated language to reflect the most recent applicable EOs.• In Chapter 26, Section 1.1, replaced EO 13893, Planning for Federal Sustainability in the Next Decade, with EO 13834, Efficient Federal Operations.• In Chapter 26, Section 2.5, language was changed to clarify the meaning of Treatment.• In Chapter 26, Section 5.2, removed due date of February 1 on green purchasing data as Agency dates vary each year.• In Chapter 25, updated Historic Preservation Officer title to Cultural Resources Manager.• In Chapter 28, Section 3, updated title to The KSC Energy and Water Ten-Year Implementation Plan as the Five-Year Plan was replaced with the Ten-Year Plan• In Chapter 28, Section 4.2, deleted paragraph in accordance with new EO.• In Chapter 28, added Section 1, Energy Conservation and Section 2, Water Conservation). Section 4 was updated with additional responsibilities. Updated language to reflect the most recent applicable EOs.
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PREFACE

P.1 PURPOSE

Requirements listed within this document are to ensure National Aeronautics and Space Administration (NASA) Kennedy Space Center (KSC) maintains compliance with Federal, state and local environmental laws and regulations. This document details responsibilities of the KSC Environmental Assurance Branch (EAB), the KSC Environmental Management Branch (EMB), and other KSC organizational elements.

P.2 APPLICABILITY

a. These requirements apply to all KSC organizational elements, including contractor organizations. Requirements for KSC Partner organizations (for example, commercial partners, other Federal agencies, and tenants) are specified in the respective real property agreements and in subsequent administrative modifications.

b. In this directive, all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The terms “may” or “can” denote discretionary privilege or permission, “should” denotes a good practice and is recommended, but not required, “will” denotes expected outcome, and “are/is” denotes descriptive material.

c. In this directive, all document citations are assumed to be the latest version unless otherwise noted.

P.3 AUTHORITY

- a. [NASA Policy Directive \(NPD\) 8500.1, NASA Environmental Management](#)
- b. [NASA Procedural Requirements \(NPR\) 8553.1, NASA Environmental Management System \(EMS\)](#)
- c. [Kennedy NPD \(KNPD\) 8500.1, KSC Environmental Management](#)

P.4 APPLICABLE DOCUMENTS AND FORMS

- a. [7 United States Code \(USC\) § 136 et seq., Federal Insecticide, Fungicide, and Rodenticide Act \(FIFRA\)](#)
- b. [15 USC § 2601 et seq., Toxic Substances Control Act \(TSCA\)](#)
- c. [16 USC § 1531 et seq., Endangered Species Act \(ESA\)](#)
- d. [16 USC § 703 et seq., Migratory Bird Treaty Act](#)
- e. [16 USC §§ 1451-1464, Coastal Zone Management Act of 1972](#)
- f. [33 USC § 401, Construction of Bridges, Causeways, Dams or Dikes Generally; Exemptions](#)
- g. [33 USC § 403, River and Harbors Act of 1899](#)

- h. [33 USC § 1251 et seq., Clean Water Act \(CWA\)](#)
- i. [33 USC § 1344, Permits for Dredged or Fill Material](#)
- j. [42 USC §§ 4321-4347, National Environmental Policy Act of 1969](#)
- k. [42 USC § 4901 et seq., Noise Control Act of 1972](#)
- l. [42 USC § 6901 et seq., Resource Conservation and Recovery Act \(RCRA\)](#)
- m. [42 USC § 7401 et seq., Clean Air Act \(CAA\)](#)
- n. [42 USC § 8259b et seq., Federal Procurement of Energy Efficient Products](#)
- o. [42 USC § 9601 et seq., Superfund Amendments and Reauthorization Act or Comprehensive Environmental Response, Compensation, and Liability Act \(CERCLA\)](#)
- p. [42 USC § 11011 et seq., Emergency Planning and Community Right-To-Know Act \(EPCRA\)](#)
- q. [42 USC § 13101 et seq., Pollution Prevention Act of 1990](#)
- r. [54 USC § 300101 et seq., National Historic Preservation Act \(NHPA\) of 1966](#)
- s. [Public Law 103-329](#)
- t. [Federal Acquisition Regulation \(FAR\) Subpart 23.1, Sustainable Acquisition Policy](#)
- u. [Executive Order \(EO\) 11593, Protection and Enhancement of the Cultural Environment](#)
- v. [EO 11988, Floodplain Management](#)
- w. [EO 11990, Protection of Wetlands](#)
- x. [EO 13007, Indian Sacred Sites of 1996](#)
- y. [EO 13175, Consultation and Coordination with Indian Tribal Governments](#)
- z. [EO 13287, Preserve America](#)
- aa. [EO 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis](#)
- bb. [EO 14008, Tackling the Climate Crisis at Home and Abroad](#)
- cc. [14 Code of Federal Regulations \(CFR\), Chapter V, NASA, Parts 1200-1299](#)
- dd. [29 CFR, Chapter XVII, Occupational Safety and Health Administration \(OSHA\)](#)
- ee. [32 CFR, Part 989, Environmental Impact Analysis Process](#)

- ff. [36 CFR, Part 800, Protection of Historic Properties](#)
DOE
- gg. [36 CFR, Parks, Forests and Public Property](#)
- hh. [36 CFR 79, Curation of Federally-owned and Administered Archaeological Collections](#)
- ii. [40 CFR, Protection of Environment](#)
- jj. [49 CFR, Transportation](#)
- kk. [50 CFR, Part 402, Wildlife and Fisheries](#)
- ll. [NASA Standard 8719.12 Safety Standard for Explosives, Propellants, and Pyrotechnics](#)
- mm. [NPR 1441.1 NASA Records Program Management Requirements](#)
- nn. [NPR 4200.1, NASA Equipment Management Procedural Requirements](#)
- oo. [NPR 4200.1H, NASA Equipment Management Procedural Requirements](#)
- pp. [NPR 8510.1, NASA Cultural Resources Management](#)
- qq. [NPR 8530.1, NASA Sustainable Acquisition](#)
- rr. [NPR 8553.1, NASA EMS](#)
- ss. [NPR 8570.1, NASA Energy Management Program](#)
- tt. [NPR 8580.1, Implementing the National Environmental Policy Act and EO 12114](#)
- uu. [KNPD 1150.24, KSC Councils, Boards, and Committees](#)
- vv. [KNPD 1860.1, KSC Radiation Protection Program](#)
- ww. [KNPD 8710.1, KSC Emergency Management Program Policy](#)
- xx. [Kennedy NASA Procedural Requirements \(KNPR\) 1840.19, KSC Industrial Hygiene Program](#)
- yy. [KNPR 1860.1, KSC Ionizing Radiation Protection Program](#)
- zz. [KNPR 1860.2, KSC Nonionizing Radiation Protection Program](#)
- aaa. [KNPR 4000.1, Supply and Equipment Systems Manual](#)
- bbb. [KNPR 8553.1, NASA KSC Sustainable Environment Management System \(SEMS\)](#)
- ccc. [KNPR 8715.2, Comprehensive Emergency Management Plan](#)
- ddd. [KNPR 8715.3, KSC Safety Procedural Requirements](#)

eee. Kennedy Customer Agreement (KCA) 1354, Joint Operating and Support Agreement between the 45th Space Wing and NASA KSC

fff. KCA-1649, Interagency Agreement between the NASA KSC and United States (U.S.) Department of the Interior (DOI) Fish and Wildlife Service (FWS) for Use and Management of Property at KSC known as Merritt Island National Wildlife Refuge (MINWR).

ggg. KCA 4185, Programmatic Agreement (PA) for the Management of Historic Properties at KSC

hhh. [Kennedy Documented Procedures \(KDP\)-KSC-P-1449, Use of Recycling Funds for Center-wide Projects](#)

iii. [KDP-KSC-P-1728, KSC Pollution Incident Report \(PIR\)](#)

jjj. [KDP-KSC-P-2236 Ordnance Life Cycle](#)

kkk. [KDP-KSC-P-3008, Hazardous Materials Emergency Response](#)

lll. [KDP-P-1726, Environmental Assessment \(EA\)](#)

mmm. [KDP-P-1727, Environmental Checklist \(EC\)](#)

nnn. [KDP-P-1733, Review of Potential Effects to Historic Properties](#)

ooo. [KDP-P-3235, Land Withdrawal from FWS To Support NASA Missions](#)

ppp. [KSC-PLN-1210, Lighting Operations Plan](#)

qqq. [KSC-PLN-1733, NASA KSC Integrated Cultural Resources Management Plan \(ICRMP\)](#)

rrr. [KSC-PLN-1801, Biological Safety Plan](#)

sss. [KSC-PLN-1911, Environmental Resources Document \(ERD\)](#)

ttt. [KSC-PLN-1919, Spill Prevention, Control, and Countermeasures \(SPCC\) Plan](#)

uuu. [KSC-PLN-1920, Appendix B, KSC Site-Specific SPCC Plan](#)

vvv. [KSC-PLN-3008, Aqueous Film Forming Foam Release Cleanup Plan for KSC](#)

www. [KSC-PLN-8553, KSC Center Sustainability Plan](#)

xxx. [KSC-UG-1904, NASA Employee Exposure Control Plan for Bloodborne Pathogens](#)

yyy. [EAP-REF-0001, KSC/Schwartz Road Landfill Class III Operations Plan](#)

zzz. [EVS-P-0001, Waste Management and Sampling Plan](#)

aaaa. [American National Standards Institute \(ANSI\) Z358.1, American National Standard for Emergency Eyewash and Shower Equipment](#)

- bbbb. [EPA SW-846 Method 8082A, Polychlorinated Biphenyls \(PCB\) by Gas Chromatography](#)
- cccc. [Florida Administrative Code \(FAC\) Chapter 5E, Pesticides](#)
- dddd. [FAC Chapter 40C-2, Permitting of Consumptive Uses of Water](#)
- eeee. [FAC Chapter 40C-4, Environmental Resource Permits: Surface Water Management Systems](#)
- ffff. [FAC Chapter 62, Department of Environmental Protection](#)
- gggg. [FAC Chapter 62-550, Drinking Water Standards Monitoring and Reporting](#)
- hhhh. [FAC Chapter 62-555, Permitting, Construction, Operation, and Maintenance of Public Water Systems](#)
- iiii. [FAC Chapter 62-602, Water or Domestic Wastewater Treatment Plant Operators and Distribution System Operators](#)
- jjjj. [FAC Chapter 62-699, Treatment Plant Classification and Staffing](#)
- kkkk. [FAC Chapter 62-701, Solid Waste Management Facilities](#)
- llll. [FAC Chapter 64E-8, Drinking Water Systems](#)
- mmmm. [FAC Chapter 64E-6, Standards for Onsite Sewage Treatment and Disposal Systems](#)
- nnnn. [Florida Statutes \(FS\), Chapter 388, Florida Mosquito Control Law](#)
- oooo. [FS Chapter 403, Environmental Control](#)
- pppp. [FS Chapter 482, Florida Structural Pest Control Act](#)
- qqqq. [FS Chapter 487, Florida Pesticide Law](#)
- rrrr. [American Indian Religious Freedom Act of 1978](#)
- ssss. [Archaeological Resources Protection Act of 1979](#)
- tttt. [Native American Graves Protection and Repatriation Act of 1990](#)
- uuuu. [National Environmental Policy Act of 1969](#)
- vvvv. [KSC Form 4-295, Hypergol Fuel Partial Decontamination Verification Tag](#)
- www. [KSC Form 4-296, Hypergol Oxidizer Partial Decontamination Verification Tag](#)
- xxxx. [KSC Form 7-49, Purchase Request \(Supplies/Equipment or Property Turn In\)](#)
- yyyy. [KSC Form 16-522, Asbestos Hazard Sign](#)

zzzz. [KSC Form 21-555, PIR and Notification](#)

aaaaa. [KSC Form 21-608, KSC EC](#)

bbbbb. [KSC Form 26-551, Process Waste Questionnaire \(PWQ\)](#)

cccc. [KSC Form 28-809, Waste Support Request \(WSR\)](#)

dddd. [KSC Form 28-825, Waiver for Sustainable Acquisition Product/Services](#)

eeee. [KSC Form 28-1019, Waste Aerosol Can Container Labels](#)

ffff. [KSC Form 28-1020, Waste Aerosol Cans Only Label](#)

ggggg. [KSC Form 28-1084, NASA-KSC/Schwartz Road Landfill Non-Friable Asbestos Landfill Disposal Verification Form](#)

hhhhh. [KSC Form 28-1088, Petroleum Contact Water \(PCW\) Label](#)

iiii. [KSC Form 28-1117, Spent Blast Media Disposal Certification](#)

jjjj. [KSC Form 29-759, Label, Hazardous Waste Determination In-Progress \(HWDIP\)](#)

kkkkk. [KSC Form 29-1096, Ammonia Partial Decontamination Verification Tag](#)

llll. [KSC Form LMUW05, Label, Universal Waste \(UW\)](#)

mmmmm. [Air Force \(AF\) Form 813, Request for Environmental Impact Analysis](#)

nnnnn. [Florida Department of Environmental Protection \(FDEP\) Form 62-257.900\(1\), Notice of Demolition or Asbestos Renovation](#)

oooo. [FDEP Form 62-620.910\(17\), No Exposure Certification for Exclusion From National Pollutant Discharge Elimination System \(NPDES\) Stormwater Permitting](#)

ppppp. [FDEP Form 62-701.900\(1\), Solid Waste Management Facility Permit](#)

qqqqq. [St. Johns River Water Management District \(SJRWMD\) Form 62-330.060\(1\) Application for Individual And Conceptual Environmental Resource Permit/Authorization to Use State-Owned Submerged Lands/Federal Dredge and Fill Permit, Sections A through I](#)

rrrrr. [SJRWMD Form 40C-4.900\(3\), Construction Commencement Notice](#)

sssss. [Guidance for Halon Emissions Reduction Rule \(40 CFR Part 82, Subpart H\)](#)

P.5 MEASUREMENT/VERIFICATION

Compliance with the requirements contained in this KNPR will be verified through normal surveillance, audit, and assessment activities performed by the NASA Spaceport Integration and Services organization. Refer to [Section 2.9](#) of this KNPR for details about inspection, monitoring, testing, and reporting performed by NASA environmental personnel or their designees.

P.6 CANCELLATION

This revision cancels KNPR 8500.1, Rev. D-1, KSC Environmental Requirements.

/original digitally signed 11-9-2021 by/

Nancy P. Bray
Director, Spaceport Integration and Services

Distribution: TechDoc Library

CHAPTER 1. KENNEDY SPACE CENTER ENVIRONMENTAL REQUIREMENTS

1.1 Goal

The goal of this KNPR is to provide consistent direction for implementation of environmental requirements in support of the Center's operations.

1.2 Objective

The objective of this KNPR is to document Center environmental requirements and implement procedural direction unique to KSC by effectively and efficiently conveying those requirements to employees, customers, and the public.

1.3 Responsibilities

1.3.1 The heads of primary organizations, contract managers, and contract technical representatives are responsible for ensuring compliance with the provisions of this KNPR on the part of civil service and contractor personnel who support programs for which they have primary responsibility.

1.3.2 Partner organizations are responsible for ensuring all operations, activities, equipment, and facilities comply with all Federal; State of Florida; and local environmental laws, statutes, regulations, and ordinances. Partners are commercial entities using KSC facilities. Unless stated otherwise in their agreement, the Partner is solely responsible for compliance with aforementioned environmental regulatory requirements including environmental permits. The Partner shall be considered an independent entity responsible for its own actions for the purpose of environmental compliance and permitting matters.

CHAPTER 2. GENERAL ENVIRONMENTAL RESPONSIBILITIES

2.1 Boards and Committees

2.1.1 The EAB and EMB, collectively referred to as the Environmental Branches, represent the Center's environmental interests on the following internal and external boards and committees:

- a. NASA Environmental Management Panel
- b. NASA Energy Efficiency Panel
- c. Space Coast Environmental Solutions Tier I Partnering Team
- d. Space Coast Environmental Tier II Partnering Team
- e. Space Coast Water Quality Tier I Partnering Team
- f. Space Coast Waste Trackers Tier I Partnering Team
- g. Space Coast Air Tier I Partnering Team
- h. KSC Energy and Water Working Group
- i. KSC SEMS Steering Committee
- j. KSC SEMS Core Teams

2.1.2 Contractor and organizational environmental points of contact are expected to participate in the above working groups when requested by the NASA EAB or EMB.

2.2 Sustainable Environment Management System

2.2.1 [NPR 8553.1](#) requires NASA Centers to implement and maintain an EMS. KSC's SEMS, as described in [KNPR 8553.1](#), is in conformance with [NPR 8553.1](#). KSC documents this conformance through annual management reviews and a triennial declaration of conformance. The KSC SEMS addresses the sustainable practice areas and goals stated in the most recent applicable Executive Orders and [KSC-PLN-8553](#).

2.2.2 Contractors, tenants, and concessionaires shall support the KSC SEMS via data input, reporting, and external and internal audits if required to do so by their contracts or KSC Partnership Agreements.

2.3 Preparing Documentation

2.3.1 The initiating organization shall be responsible for preparing all documentation mandated by applicable environmental requirements for the organization's actions or operations. This includes signing and sealing of permit applications, design drawings, and other correspondence by a professional engineer (PE) when required.

2.3.2 The NASA Environmental Branches are available for consultation to assist the initiating organization in compiling any necessary documentation. The NASA Environmental Branches are responsible for reviewing all documentation and submitting it to the appropriate regulatory agency.

2.3.3 For agencies accepting electronic submittals, NASA may request contractors submit electronic copies of permit applications to regulatory agencies and pay associated submittal fee(s). When contractors pay permit application fee(s), they shall provide to the NASA EAB documentation of payment.

2.3.4 Organizations responsible for maintaining onsite documentation (as established by regulation or permit condition) shall ensure the proper documentation is readily available for internal or regulatory inspections.

2.3.5 The NASA Environmental Branches are responsible for providing copies of all permits and other applicable documentation from sources external to KSC to the appropriate KSC organizations. The NASA Environmental Branches shall maintain a centralized official file for this documentation that is available upon request.

2.4 External Communications

2.4.1 The NASA Environmental Branches are the Center's single interface for official communications with environmental regulatory agencies and other organizations external to KSC regarding environmental issues. Some examples of official communications include negotiating permit conditions, enforcement orders, compliance agreements, regulatory inspections, and discussions that affect KSC programs and operations or have multi-organization implications.

2.4.2 Establishing the NASA Environmental Branches as a single interface is intended to ensure consistent application of environmental program requirements across the Center, to present a consistent position to parties external to the Center, and to meet Office of Federal Procurement Policy and NASA Headquarters (HQ) mandates regarding inherently Governmental functions. Activities that require the exercise of discretion in applying Governmental authority, or the making of commitments that bind the U.S. to take some action, either by contract, policy, regulation, authorization, order, monetary payment, or otherwise, are considered inherently governmental and shall be performed by Government employees.

2.5 Interpreting Regulation and Establishing Kennedy Space Center Requirements

2.5.1 The NASA Environmental Branches shall provide requirements and guidance on environmental issues at KSC using the following methods:

- a. Evaluating and maintaining current knowledge of all environmental requirements.
- b. Developing appropriate KSC procedures and controls and enable access by all Center organizations to help ensure compliance.

2.5.2 When environmental requirements necessitate interpretation, the NASA Environmental Branches shall provide a response to KSC organizations based on in-house expertise or negotiated agreements with regulatory agencies.

2.5.3 When required, the NASA Environmental Branches shall:

- a. Request clarification from and negotiate new agreements with the appropriate regulating agencies and elicit input and participation from KSC organizations when preparing the Center's position on a subject or when meeting with regulatory personnel.
- b. Provide the new agreements or clarifications to KSC organizations when they are finalized.

2.6 Implementing Policy and Regulations

2.6.1 All KSC organizations (NASA, tenant, and contractor) must ensure all actions taken under their authority and funding meet the applicable requirements of all Federal, state, and local environmental laws and regulations, including obtaining all required environmental permits.

2.6.2 Each organization must ensure that controls on employee, contractor, and subcontractor activities are established and maintained to prevent noncompliance.

2.7 Inspection, Monitoring, Testing, and Reporting

2.7.1 Each KSC organization must ensure the appropriate requirements of the regulations are fulfilled for operations and activities under their control. Each KSC organization is responsible for testing, inspecting, monitoring, and reporting required to comply with environmental regulations.

2.7.2 Inspections

a. Facility managers or qualified personnel shall perform routine inspections of facilities or operations as required by regulations, permits, and this KNPR. All persons performing inspections will be qualified to do so in accordance with (IAW) required education, training, or experience. Examples of required routine inspections include monthly inspection of secondary containment of registered storage tanks and weekly inspection of hazardous waste storage facilities.

b. The NASA Environmental Branches and the KSC environmental support contractor shall perform periodic inspections of KSC programs and projects. The purpose of internal inspections is to ensure activities are in compliance with their respective permits or with the regulations governing their operations. These inspections will not assess punitive damages such as those assessed by the regulatory agencies. The purpose is to identify compliance concerns so they can be corrected in a timely manner by the responsible operating organization.

c. The NASA Environmental Branches shall serve as the KSC point of contact and accompany the regulator at all times while on KSC property. Environmental regulatory agencies that are authorized to inspect may do so at any time for any permitted or regulated facility or activity at KSC. The regulatory agency may give verbal or written notice of an impending inspection or the inspection may be unannounced.

d. The KSC organization responsible for the facility or activity being inspected shall attend the inspection. Regulators can also perform sampling or monitoring on any substance or parameter at any KSC facility to determine compliance with a permit. Regulatory inspection findings are provided to operational personnel and the management of the organization.

2.7.3 Monitoring

a. Environmental monitoring of operational areas at KSC must be performed to determine if permitted activities are operating IAW the general and specific conditions listed in a permit.

b. Permit-related sampling and analysis shall be performed by the KSC Environmental Sampling, Analysis, and Monitoring (ESAM) Office, operational personnel, or designated representatives.

c. Monitoring results must be transferred to the appropriate report forms and transmitted to the operating organization.

d. The operating organization shall:

(1) Review the data provided by the KSC ESAM or operational personnel to ensure no transcription errors have occurred.

(2) List items of noncompliance and explain the reason for noncompliance in a report.

(3) Transmit the monitoring reports to the NASA Environmental Branches. An exception applies for KSC Partners with their own permits who submit operating reports directly to the regulatory agency.

e. The Chief of the NASA EAB shall sign the monitoring reports as the owner, operator, or authorized representative.

NOTE: An exception applies for reports that require the signature of a licensed operator as in the case of the Monthly Operating Reports for drinking water treatment or when KSC Partners have their own permits.

2.7.4 Testing

a. The operator or installer, as applicable, shall perform any operational testing required by permit or regulation. Examples of such testing are as follows:

(1) Tightness tests for storage tank installations to certify the integrity of a tank before placed in service.

(2) Leak tests to determine the integrity of the containment system.

b. Any reports of testing results shall be maintained onsite and a copy forwarded to the NASA Environmental Branches through the operating organization for submittal to the proper agency, if required.

2.7.5 Reporting

- a. All required regulatory reports shall be submitted to regulatory agencies through the NASA Environmental Branches, except for reports associated with permits held by KSC Partners.
- b. The operating organization shall make certain the required reports are submitted to the NASA Environmental Branches in sufficient time to ensure the reports reach the regulatory agency in the time period listed in the applicable permit or regulation.
- c. The NASA Environmental Branches shall review the submittal for completeness and accuracy.
- d. The operating organization shall be notified of any deficiencies by the NASA Environmental Branches and be responsible for correcting deficiencies.
- e. The NASA Environmental Branches shall submit the report to the appropriate regulatory agency.
- f. Copies of the correspondence transmitted to the regulatory agency shall be kept by the NASA Environmental Branches.
- g. The NASA Environmental Branches shall be the listed point of contact for all monitoring report submittals and coordinate inquiries from regulatory agencies concerning monitoring and testing data.

2.8 National Aeronautics and Space Administration Environmental Tracking System

2.8.1 The NASA Environmental Tracking System (NETS) is an information management tool (central database) for assisting NASA and contractor personnel in the collection, maintenance, and reporting of environmental data related to KSC operations.

2.8.2 The NETS environmental database is maintained for the Agency by Glenn Research Center. KSC civil servants and contractors are granted access to the system as required for data input. NASA Environmental Branches shall consolidate the information and submit it to NASA HQ through NETS.

2.8.3 Online NETS training is available and NASA Environmental representatives are available for guidance during training and report generation periods.

2.9 Training

2.9.1 KSC organizations and partners shall ensure personnel receive proper training prior to engaging in activities that could potentially have environmental impacts. Mandatory training is specifically set forth in state and Federal regulations for certain activities and operations.

2.9.2 KSC organizations shall maintain training records for compliance purposes.

2.10 Public Involvement

2.10.1 Public involvement through public notice, comments, or input must be required at times by Federal, state, or local regulations to support environmental actions at KSC. Actions include permit applications and modifications, EA, and Environmental Impact Statements (EIS). Public involvement also occurs through workshops, public meetings, public hearings, and administrative hearings.

- a. The workshop is an informal meeting to inform the public of the status of a specific topic and to answer any questions the public might have.
- b. The public meeting is an informally structured meeting to discuss a specific topic and receive the public's input.
- c. A public hearing is a formally structured meeting run by the interested Government agency and is part of the public record.
- d. An administrative hearing is a legal proceeding run by a hearing officer. It is conducted after an Intent to Issue Permit has been challenged and is attended by lawyers for the challenging and the defending parties.

2.10.2 The NASA Environmental Branches shall develop the content and implement the public involvement activities.

2.10.3 The responsible organization shall support the technical aspects of the meetings and coordinate the details with the NASA Environmental Branches, including date, time, and place of meetings; press releases; and fact sheets.

2.11 Permit Compliance and Violations

2.11.1 Each KSC organization shall develop instructional procedures to ensure compliance with permit requirements within their organization and be responsible for reporting apparent permit violations to the NASA Environmental Branches.

2.11.2 The NASA Environmental Branches shall report apparent permit violations to the appropriate state or Federal agencies, and negotiate compliance requirements in cooperation with the lead organization.

2.11.3 The KSC Partners shall negotiate resolution and corrective actions with the regulatory agencies for violations identified during regulatory inspections at their facilities.

CHAPTER 3. THE NATIONAL ENVIRONMENTAL POLICY ACT IMPLEMENTATION

3.1 Kennedy Space Center Environmental Checklist

3.1.1 [The National Environmental Policy Act \(NEPA\) of 1969](#) requires Federal agencies to prepare an environmental analysis of any action undertaken that could affect the environment. Implementation of the NEPA is detailed in [NPR 8580.1](#). The KSC EC process ([KDP-P-1727](#)) initiates the initial environmental review of projects and actions processes under this requirement. All NASA organizations and KSC tenants (CCSF, partners, and contractors) must comply with this KDP when their projects are on KSC property, or when NASA activities are implemented on CCSF property.

3.1.2 The KSC EC aids in early identification of environmental issues and requirements associated with proposed work and activities.

3.1.3 The project lead or requester for a project or action shall complete [KSC Form 21-608](#) at the earliest possible time in the project schedule.

3.1.4 The checklist shall be submitted for review to the NASA EMB with all supporting documentation, including but not limited to, design drawings and maps. The form and detailed instructions for its completion are available on the [KSC EMB NEPA](#) Web page.

3.1.5 If the proposed action is categorically excluded (CATEX) from further NEPA review based on the evaluation of the checklist and project information, NASA EMB will mark the appropriate space on the Record of Environmental Consideration (REC). The REC will be sent to the project proponent and NASA EMB will keep a copy. Specific activities are listed in [14 CFR 1216.304\(d\)](#) as normally being CATEX from the requirements for an EA or an EIS.

3.1.6 The REC lists all of the project's known environmental requirements based on the EC submittal. Requirements identified in the REC include permits, outside agency consultations, and special procedures or processes used during project implementation. The REC is valid for six months from the REC signature date. The project proponent shall maintain REC validity by providing NASA EMB with any project scope changes, and notification if the project has not commenced within six months of REC issuance. The proponent can update the original KSC EC to NASA EMB via e-mail. EMB will update and reissue the REC.

3.1.7 Based on the checklist information provided, if the NASA EMB determines CATEX does not apply to the proposed action, a formal EA is required. The REC identifies the EA requirement and the project proponent must prepare the EA using project funds. Refer to the process of conducting EAs in [KDP-P-1726](#). If an EA does not support a Finding Of No Significant Impact, an EIS is required. EIS preparation shall be coordinated between NASA EMB and HQ, and with support of the primary organization having programmatic responsibility. The development of and EA or EIS, supporting documentation and associated studies requires a multi-disciplinary team of environmental professionals with special expertise in NEPA rules and regulations including applicable local, state and Federal environmental regulations. In addition, special expertise in areas including, but not limited to, natural resources, land management, landuse planning, air quality, cultural and historic resources, climate change, and threatened and endangered species are typical of writers and contributors in the development of NEPA documents.

3.2 Use of Air Force Form 813 for Cape Canaveral Space Force Station Projects

3.2.1 When a new operation, facility, or project involving construction or facility structure modification on Cape Canaveral Space Force Station (CCSFS) is proposed, both [KSC Form 21-608](#) and [AF Form 813](#) are required.

3.2.2 [AF Form 813](#) shall be completed IAW [32 CFR 989](#) using information gathered during submittal of the KSC EC (See [Section 3.1](#)).

3.2.3 The project proponent shall forward the signed [AF Form 813](#) and supporting documentation to the CCSFS Environmental Office.

3.3 Environmental Resources Document

IAW [NPR 8580.1](#), NASA EMB shall prepare and update the KSC Environmental Resources Document (ERD), [KSC-PLN-1911](#), required by [14 CFR 1216.3](#). The ERD should be used by preparers of EA and EIS as a reference to avoid restating similar material. It should also be used to cover areas prescribed in [14 CFR 1216.3](#). The ERD will be reviewed annually and updated as needed with a complete revision every five years.

CHAPTER 4: POLLUTION INCIDENT REPORTING AND CLEANUP

4.1 Pollution Incident Reporting to 911

4.1.1 All hazardous material releases to air, water, soil, or pavement shall be reported to the NASA Environmental Branches immediately IAW the requirements in [KDP-KSC-P-3008](#).

- a. At KSC, emergency services can be reached from a desk phone by dialing 911 (or 321-867-7911 from a cell phone).
- b. At CCSFS, KSC-operated facilities can reach emergency services from a desk phone by dialing 911 (or 321-853-0911 from a cell phone).
- c. At Patrick Space Force Base (PSFB), KSC-operated facilities can reach emergency services from a desk phone by dialing 911 (also 911 from a cell phone and state to the operator that you are located at PSFB).

4.1.2 If the caller is unsure whether or not the release is non-emergency or emergency, the call will be treated as an emergency. The KSC Spill Response Team will not respond to a release unless 911 has been notified.

4.1.3 A release is defined as the spilling, leaking, discharging, emitting, escaping, pouring, dumping, draining, leaching, seeping, injecting, placing, or disposing of a material.

4.2 Pollution Incident Reporting to National Aeronautics and Space Administration Environmental Assurance Branch

4.2.1 Organizations and contractors shall immediately report all substance releases (intentional and unintentional) listed below to the NASA EAB by e-mailing the details to ksc-dl-nasa-env-spill@mail.nasa.gov, or by calling the dedicated pollution incident release reporting number 321-867-9005:

- a. CERCLA list of hazardous substances in [40 CFR 302.4](#).
- b. EPCRA list of extremely hazardous substances (EHS) in [40 CFR 355 Appendix A](#).
- c. EPCRA toxic chemical listing in [40 CFR 372.65](#).
- d. Department of Transportation (DOT) hazardous materials table in [49 CFR 172.101](#).
- e. CAA list of regulated toxic substances for accidental release prevention in [40 CFR 68.130](#).
- f. Class I ozone depleting substances (ODS) listed in [40 CFR 82 Appendix A](#).
- g. Class II ODS listed in [40 CFR 82 Appendix B](#).
- h. Domestic waste water or untreated sewage.
- i. Oils, fuels, greases, and other petroleum products.

4.2.2 The NASA EAB shall determine if the released substance exceeds a reportable threshold and report the release to the appropriate offsite authorities and regulatory agencies.

4.3 Pollution Incident Documentation

4.3.1 All releases shall be documented IAW [KDP-KSC-P-1728](#), unless the release meets the exemptions listed in [Section 4.4](#) of this KNPR.

a. Organizations and contractors shall complete and submit a PIR and Notification to the NASA EAB within three working days after the release.

b. The PIR shall be submitted to the NASA EAB via the [PIR reporting Web site](#). If unable to access the PIR Web site, submit a [KSC Form 21-555](#) to the NASA EAB within three working days after the release by e-mailing it to ksc-dl-nasa-env-spill@mail.nasa.gov. The PIR form and instructions for completing the form are available on the [KSC Electronic Forms Web site](#). The notification must include the following information:

- (1) A map of appropriate scale showing the location of the discharge area(s)
- (2) General dimensions of affected area
- (3) Photos (if available)

c. The NASA EAB shall review the submitted PIR form, contact the submitter for additional information (if required), and provide direction to the submitter regarding follow-on actions (if required).

d. Organizations and contractors shall also ensure that PIR forms are submitted for the following types of releases:

- (1) Any process water releases, cooling tower water releases, or industrial wastewater releases not covered by an existing permit or discharge authorization
- (2) Intentional and unintentional releases of halons
- (3) Unintentional releases of ODS not associated with a refrigerant system
- (4) Refrigerant system discharges over 50 pounds

4.4 Pollution Incident Report Exemptions

4.4.1 Organizations and contractors do not have to complete and submit PIR forms to the NASA EAB for the following releases:

a. Small amounts (four fluid ounces or less) of materials released inside a facility on impervious surfaces that are immediately cleaned up, do not migrate out of the facility, and do not reach soil, sediment, groundwater, or surface water. Exceptions to this exemption are as follows:

- (1) Floors with cracks, expansion joints, drains, etc., as they are not considered “impervious surfaces.”

- (2) Any spills or releases requiring assistance from the KSC Spill Response Team.
- b. Release of materials (four fluid ounces or less, or vapor) that occur during normal operations or scheduled activities (e.g., drips from a hose disconnection) as long as they are immediately cleaned up and do not reach soil, sediment, groundwater, or surface water. This exemption does not apply to spills or releases requiring assistance from the KSC Spill Response Team.
- c. Discharges or releases covered by a permit or discharge authorization as long as the release meets the permit or discharge authorization conditions or limits.
- d. Discharges of refrigerant system less than 50 pounds.
- e. Any releases of major atmospheric gases (nitrogen and oxygen) or non-radioactive isotopes of noble gases (helium, neon, argon, etc.).
- f. Potable water or sewage releases. The base support contractor shall submit malfunction reports to the NASA EAB and FDEP for accidental releases associated with the KSC potable water and domestic wastewater systems.

4.4.2 The NASA EAB shall maintain an electronic database of submitted PIR forms to evaluate incidents, track cleanup status, perform trend analysis, and respond to data calls from NASA HQ. The database is also used to support environmental planning, property transfers and leases, site assessments, and environmental remediation efforts.

4.5 Cleanup

4.5.1 Organizations and contractors shall take measures to stop, minimize, contain, and clean up releases (with trained onsite personnel) provided those actions do not pose health or safety risks to personnel.

4.5.2 Once the release has been deemed a non-emergency or the emergency response activity is complete, organizations and contractors shall be responsible for ensuring proper cleanup of release and may request support from the KSC Spill Response Team.

4.5.3 The responsible organization or contractor shall complete the cleanup if it is determined the contamination is beyond the scope or capability of the KSC Spill Response Team which includes the following:

- a. Large-scale contamination.
- b. Contamination reaching the groundwater table.
- c. Contamination that is inaccessible due to utilities or structures.
- d. Contamination where cleanup threatens to undermine a structure.
- e. Contamination where conditions are unsafe for KSC Spill Response Team members.

4.5.4 All releases shall be cleaned up according to the criteria in [Chapter 4.6](#) of this KNPR.

4.5.5 Organizations and contractors shall coordinate all cleanups involving releases to environmental media (soil, sediment, surface water, or groundwater) with the NASA EAB.

4.5.6 The NASA EAB shall notify and correspond with regulatory agencies, if required, regarding cleanups involving releases to environmental media (soil, sediment, surface water, or groundwater).

4.5.7 Organizations and contractors shall submit sampling results, cleanup reports, and other information documenting the cleanup to the NASA EAB.

4.6 Cleanup Criteria

4.6.1 Spills and releases to pervious surfaces (includes soil, sediment, surface water, or groundwater) outside the boundaries of a Solid Waste Management Unit (SWMU) or Potential Release Location (PRL) shall be cleaned up to the following standards:

a. Soil, surface water, and groundwater cleanup levels shall meet residential criteria as stated in [FAC 62-777](#).

b. Sediment under fresh waters shall meet the [Development and Evaluation of Numerical Sediment Quality Assessment Guidelines for Florida Inland Water](#), published by FDEP in January, 2003.

c. Sediment under marine waters shall meet [Approach to the Assessment of Sediment Quality in Florida Coastal Waters](#), published by FDEP in November, 1994.

d. Sediments with contaminants not addressed under the fresh water or marine water guidance above shall meet the [Environmental Protection Agency \(EPA\) Region 4 Waste Management Division Sediment Screening Values for Hazardous Waste Sites](#).

4.6.2 Spills and releases to pervious surfaces (includes soil, sediment, surface water, or groundwater) within the boundaries of an SWMU or PRL must be cleaned up to standards provided by the NASA EAB for all environmental media based on the release details and the location of the release in relation to known contamination within the SWMU or PRL.

4.6.3 Spills and releases to impervious surfaces will be cleaned until there is no visible contamination left. Surfaces with cracks, expansion joints, sumps, drains, or other potential routes to environmental media (soil, sediment, surface water, or groundwater) are not considered impervious surfaces.

4.6.4 For cleanups involving releases to environmental media (soil, sediment, surface water, or groundwater), post-cleanup sample(s) will be collected and analyzed to confirm that all contamination has been sufficiently removed to meet the cleanup standard.

4.6.5 For cleanups involving releases to environmental media (soil, sediment, surface water, or groundwater), sampling locations and cleanup areas will be recorded with a global positioning system unit that is accurate to one meter.

4.6.6 For cleanups involving the release of Aqueous Film Fighting Foam (AFFF) cleanup shall be completed according to [KSC-PLN-3008](#).

4.6.7 Any deviation or exception to the cleanup criteria listed above shall be approved in writing by the NASA EAB Chief.

4.7 Financial Responsibility for Cleanup

4.7.1 When environmental contamination of soil, sediment, surface water, or groundwater results from failure to follow established procedures or existing regulatory requirements, deferred maintenance, obsolescence or failure to maintain a facility or containment, or failure to implement sound environmental management controls, the culpable organization or contractor shall be financially responsible for all cleanup costs.

4.7.2 At the discretion of the NASA EAB Chief, the responsible contractor or organization shall not be held financially responsible for cleaning up environmental contamination caused by events which are not foreseeable and are outside of human control (such as natural disasters) and which are in no way related to a lack of due diligence as described in the previous paragraph.

CHAPTER 5. SPILL PREVENTION, CONTROL, AND COUNTERMEASURES

5.1 Background and Regulatory Requirements

5.1.1 Oil pollution prevention regulations (commonly referred to as SPCC regulations), found in [40 CFR Part 112](#), are designed to prevent discharges of oil from reaching the navigable waters of the U.S. and to ensure proactive and effective measures are used in response to an oil discharge.

5.1.2 SPCC regulations require the preparation and implementation of formal SPCC plans for all non-transportation related facilities that store oil in excess of specific quantities (an aggregate above-ground container capacity greater than 1,320 gallons [only containers greater than or equal to 55 gallons are counted], or completely buried storage capacity greater than 42,000 gallons) and that have discharged or could reasonably be expected to discharge oil into navigable waters of the U.S. or its adjoining shorelines.

5.1.3 Since KSC stores more than 1,320 gallons of oil above-ground and a discharge could reach navigable waters, KSC is subject to the SPCC regulations and must develop and maintain an SPCC plan.

5.1.4 According to SPCC regulations, the NASA EAB shall maintain a complete copy of the KSC SPCC Plan onsite and make it available to EPA personnel upon request.

5.2 Spill Prevention, Control, and Countermeasures Plan

5.2.1 The KSC SPCC Plan consists of two documents: [KSC-PLN-1919](#) and [KSC-PLN-1920](#).

a. [KSC-PLN-1919](#) contains general requirements and procedures for the prevention, response, control, and reporting of oil discharges at KSC. The plan serves as a guide for personnel and organizations responsible for ensuring that all measures are taken to prevent and contain discharges and leaks of oil IAW all applicable Federal and state regulations.

(1) According to SPCC regulations, the NASA EAB shall review and update [KSC-PLN-1919](#) every five years (or sooner if needed) to incorporate changes in SPCC regulations, KSC requirements, guidance, organizations, and contractors.

(2) [KSC-PLN-1919](#) shall contain the following information:

(a) A general description of the installation as it pertains to oil spill prevention, control, and response.

(b) An inventory of the storage, handling, and transfer facilities that could potentially produce a discharge of oil to navigable waters or adjoining shorelines.

(c) Roles and responsibilities for discharge detection and prevention for all organizations that use or store oil.

(d) Roles and responsibilities for personnel and organizations involved in coordinating and participating in the response to discharges of oil.

(e) SPCC training requirements for oil handling personnel.

- (f) Reporting procedures and recordkeeping requirements for spills.
- (g) A PE certification for all technical amendments to an SPCC Plan.
- b. [KSC-PLN-1920, Appendix B](#), contains site-specific SPCC plans detailing the location, oil storage quantity, spill routes, spill prevention, and spill response measures for all KSC locations where oil is stored in containers with a capacity of at least 55 gallons.
- (1) The operating organizations and contractors shall develop, maintain, and implement site-specific SPCC plans for their oil storage activities.
- (2) Site-specific SPCC plans shall comply with SPCC regulations and the requirements in [KSC-PLN-1919](#).
- (3) Site-specific plans in [KSC-PLN-1920](#) shall contain the following information:
 - (a) A description of the oil stored, handled, or transferred at that location (facility number, material name, number of containers, container type, container capacity, transfer methods, etc.).
 - (b) Spill routes and a detailed description of countermeasures and equipment available for diversion and containment of discharges.
 - (c) Site-specific requirements for spill prevention, response, and control.
 - (d) A PE certification for all technical amendments to an SPCC Plan.
- (1) Since SPCC regulations require that SPCC plans be updated within six months of a change in oil storage activity, NASA EAB shall send out a data call and update [KSC-PLN-1920](#) semi-annually (or sooner if needed).
- (2) During the semi-annual update, organizations and contractors shall submit site-specific SPCC plan updates, amendment logs, and PE certifications to the NASA EAB by the due date identified in the data call letter.

5.3 Spill Prevention, Control, and Countermeasures Compliance, Discharge Reporting, and Recordkeeping

Operating organizations and contractors shall:

- 5.3.1 Ensure that all oil storage activities are in compliance with SPCC regulations, [KSC-PLN-1919](#) requirements, and [KSC-PLN-1920](#) site-specific plans.
- 5.3.2 Immediately report oil discharges according to the requirements in [Chapter 4](#) of this KNPR.
- 5.3.3 Maintain SPCC compliance records (such as training, inspection, and maintenance records) for a minimum of three years.

CHAPTER 6. AIR COMPLIANCE

6.1 Background and Regulatory Requirements

6.1.1 The CAA is the law for protecting and improving the nation's air quality and stratospheric ozone layer. The EPA's implementing regulations for the CAA are located in [40 CFR 50-99](#).

6.1.2 The CAA requires Federal facilities to "comply with all Federal, state, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of air pollution in the same manner, and to the same extent as any non-Governmental entity." Therefore, KSC is subject to all CAA requirements and implementing regulations.

6.1.3 The EPA has delegated its air permitting authority under the CAA to the FDEP. Therefore, the FDEP issues and enforces air permits at KSC.

6.1.4 The CAA regulations cover thousands of pollutants and emission sources. Six of these pollutants are considered criteria pollutants.

a. Additional regulatory requirements and emissions restrictions can apply to a facility when the ambient air concentration in the area for one or more of the six criteria pollutants exceeds certain standards. The six criteria pollutants are as follows:

- (1) Sulfur dioxide
- (2) Nitrogen oxides
- (3) Carbon monoxide
- (4) Particulate matter
- (5) Lead
- (6) Ground-level ozone

b. Areas of the U.S. that exceed a standard for a criteria pollutant are in non-attainment for that criteria pollutant. Areas of the U.S. that meet the standard for a criteria pollutant are in attainment for that criteria pollutant. Brevard County and KSC are currently in attainment for all six criteria pollutants.

6.1.5 Under the General Duty Clause of the CAA, KSC has a duty to report accidental (non-permitted) releases of air pollutants. Organizations and contractors shall take measures to eliminate or minimize air pollution emissions and prevent accidental releases and report accidental releases according to the requirements in [Chapter 4](#) of this KNPR.

6.1.6 Title V of the CAA establishes the operating permit program for facilities. A Title V Air Operation Permit is a facility-wide permit that consolidates all emission units (EU) and their applicable air compliance requirements into one permit. KSC has a Title V Air Operation Permit issued by the FDEP. As emission sources are constructed or eliminated at KSC, they are incorporated into or removed from the Title V Air Operation Permit. The NASA EAB shall manage and maintain the KSC Title V Air Operation Permit.

6.1.7 Under CAA regulations, facilities that store specific toxic and flammable substances above certain quantity thresholds must develop a Risk Management Plan (RMP) to identify hazards that may result from a release, take steps to prevent an accidental release, and minimize consequences should an accidental release occur. KSC is no longer subject to this requirement due to reduced chemical storage levels, for example mono methyl hydrazine. KSC deregistered their CAA RMP and may re-register at a later date if processes change or chemical storage quantities increase.

6.2 Kennedy Space Center Title V Air Operation Permit

6.2.1 Operational, Testing, Recordkeeping, Inspection, and Reporting Requirements

- a. Organizations and contractors shall follow all KSC Title V Air Operation Permit requirements and operate their EUs according to permit conditions and requirements.
- b. Organizations and contractors shall develop management procedures to ensure EUs are operated according to permit conditions and requirements.
- c. The KSC Title V Air Operation Permit requires that Visual Emission Observation (VEO) testing be performed on certain EUs. The frequency of the testing is specified in the permit.
 - (1) Organizations and contractors shall coordinate and schedule VEO testing with the NASA EAB to meet permit and notification requirements.
 - (2) The NASA EAB shall notify FDEP of VEO tests at least 15 days prior to the test.
 - (3) Once the VEO test is complete, organizations and contractors shall review the test results for accuracy and submit the test results to the NASA EAB.
 - (4) The NASA EAB shall submit all VEO test reports to FDEP.
- d. Organizations and contractors shall collect and maintain records (such as chemical usage data, fuel usage data, equipment operating hours, maintenance logs, sampling data, etc.) required by the permit for each EU they operate and submit these records to the NASA EAB by the tenth day of each month for the preceding month's operations.
- e. Organizations and contractors shall demonstrate compliance with all applicable regulatory and permit requirements during internal and regulatory inspections.
- f. The NASA EAB shall:
 - (1) Maintain a copy of the latest version of the KSC Title V Air Operation Permit at the facility.
 - (2) Maintain records submitted from contractors and organizations on each EU.
 - (3) Compile monthly data, calculate 12-month rolling totals to ensure compliance with permit conditions, and assess KSC's status as a major or minor emission source as defined within EPA and FDEP regulations.

- (4) Conduct periodic inspections of EUs to monitor compliance and ensure proper recordkeeping.
- (5) Maintain KSC Potential to Emit (PTE) calculations.
- (6) Maintain Site Specific Monitoring Plans as required for permitted EUs.
- g. Semi-Annual Monitoring Report, Annual Operating Report, Statement of Compliance, and Emission Fee Report.
- (1) The NASA EAB shall prepare the Semi-Annual Monitoring Report, Annual Operating Report, Statement of Compliance, and Emission Fee Report required by the permit; obtain signatures from the Office of the Associate Director; and submit the documents to FDEP by the regulatory deadline.
- (2) Organizations and contractors shall support the preparation of these documents by providing operating data, records, and compliance information as requested by the NASA EAB.
- (3) Organizations and contractors shall submit annual compliance statements to the NASA EAB certifying that their EUs were operated IAW permit conditions and requirements.

6.2.2 KSC Title V Air Operation Permit Renewals

- a. According to CAA regulations, Title V Air Operation Permits must be renewed no later than five years from the last issuance. The NASA EAB shall be responsible for identifying regulatory changes, coordinating any permit changes with organizations and contractors, exploring new permitting strategies, preparing the application, and obtaining the permit renewal.
- b. Organizations and contractors shall support the permit renewal process by providing EU information and records, reviewing and commenting on draft applications, and reviewing and commenting on draft permits.

6.2.3 KSC Title V Air Operation Permit Modifications

- a. Organizations and contractors shall immediately notify the NASA EAB of any plans to construct, purchase, modify, change the operation of, or demolish an air emission source.
- b. The NASA EAB shall review the proposed action and determine whether a permit or permit modification is required.
- c. If the NASA EAB determines that the proposed air emission source or action does not require a permit or permit modification, the NASA EAB shall notify the project proponent and instruct the project proponent about any operational conditions or recordkeeping requirements.
- d. If the NASA EAB determines that the proposed air emission source or action requires a minor modification to the KSC Title V Air Operation Permit, the NASA EAB shall execute the permit modification through the FDEP, notify the project proponent when operations can begin (or when they can execute the proposed action), and instruct the project proponent about the permit requirements, operational conditions, and recordkeeping requirements.

e. If the NASA EAB determines that the proposed air emission source or action requires a major modification to the KSC Title V Air Operation Permit, or that a new source construction and operation permit is required, the project proponent, under the direction of shall:

(1) Prepare a complete permit application package that must be signed and sealed by a registered PE (certain new sources may require a combined construction and operation permit application).

(2) Coordinate the new emission source PTE calculations with the NASA EAB maintained KSC PTE.

(3) Submit the draft application package to the NASA EAB for review.

(4) Incorporate comments identified by the NASA EAB into the application package (in coordination with the PE).

(5) Submit the final application package to the NASA EAB who shall obtain signatures from the Office of the Associate Director and submit the application package to FDEP.

(6) Prepare responses (in coordination with the PE) to any Requests for Additional Information (RAI) from FDEP regarding the permit application package.

(7) Submit RAI responses to the NASA EAB for submission to FDEP.

(8) Review the draft permit from FDEP.

(9) Provide comments or corrections to the draft permit (in coordination with the PE) to the NASA EAB for submission to FDEP.

f. The NASA EAB shall publish any required public notices regarding air permitting actions.

g. If a new source construction and operation permit is obtained, the NASA EAB shall incorporate those sources into the KSC Title V Air Operation Permit.

h. When FDEP issues an air permit, the NASA EAB shall distribute the permit to all affected contractors, organizations, and project proponents, and communicate all operational conditions, emission limits, testing requirements, and recordkeeping requirements.

6.3 Kennedy Space Center CAA Risk Management Plan

6.3.1 [Section 112\(r\) of the CAA](#) established the chemical accident prevention provisions. The chemical accident prevention implementing regulations are located in [40 CFR 68](#), and require facilities that manufacture, process, store, or handle regulated substances above thresholds listed in [40 CFR 68.130](#) to have a risk management program and RMP. The purpose of the risk management program and RMP is to identify hazards that may result from an accidental release, take steps to prevent an accidental release, and minimize consequences should an accidental release occur.

6.3.2 If KSC re-registers the CAA RMP, it will be reviewed by various emergency planning and response entities such as KSC Protective Services, Brevard County Emergency Management, State Emergency Response Commission (SERC), and the Local Emergency Planning Committee (LEPC). KSC CAA RMP elements would also be incorporated into the KSC Comprehensive Emergency Management Plan.

6.3.3 If KSC needs to re-register the RMP, the NASA EAB shall develop and maintain the KSC CAA RMP.

6.3.4 Organizations and contractors shall notify the NASA EAB prior to:

- a. Adding, deleting, or modifying (change in process, regulated substance volume, or chemical type) any operations that manufacture, process, store, or handle any regulated substance greater than the threshold listed in [40 CFR 68.130](#).
- b. Increasing the volume of a regulated substance in an existing operation to the point where it exceeds the threshold listed in [40 CFR 68.130](#).

6.3.5 RMP Modification requirements if KSC re-registers the CAA RMP:

- a. When new processes are added to the RMP, the NASA EAB must perform the required analyses, modify the RMP, and submit the revised RMP to EPA before the process becomes operational (loading of the regulated substance into the process equipment). Organizations and contractors shall support the RMP modification by providing process information to the NASA EAB as requested.
- b. For changes to existing processes listed in the RMP (process deletion, decrease in regulated substance volume below threshold levels, increase in regulated substance volume above threshold levels, etc.) the NASA EAB must perform the required analyses, modify the RMP, and submit the revised RMP to EPA within six months after the change occurs. Organizations and contractors shall support the RMP modification by providing process information to the NASA EAB as requested.
- c. In compliance with chemical accident prevention regulations, the NASA EAB shall review the RMP for changes and resubmit the RMP to EPA at a minimum of every five years even if no changes are required to the RMP.
- d. In compliance with chemical accident prevention regulations, the NASA EAB shall revise the RMP and submit it to EPA within six months after any chemical accident that meets certain criteria defined in the regulations.

e. As stated in [Section 6.1.7](#) of this KNPR, KSC deregistered the CAA RMP, but may re-register at a later date if processes change or chemical storage quantities increase.

6.3.6 Annual RMP Audits if KSC re-registers the CAA RMP:

- a. The NASA EAB shall conduct annual audits to verify that KSC operations are incorporated into and in compliance with the RMP.
- b. Prior to the audit, organizations and contractors shall complete an [Annual Applicability Checklist](#) provided by the NASA EAB.

c. The NASA EAB shall review the checklists, inspect facilities with knowledgeable organization and contractor personnel, verify RMP elements, and modify the RMP as necessary.

6.3.7 IAW [40 CFR 68.58](#), if KSC re-registers the CAA RMP, the NASA EAB shall:

a. Conduct a formal compliance audit at least every three years to ensure that all KSC operations are in compliance with chemical accident prevention regulations.

b. Inspect facilities with knowledgeable organization and contractor personnel, document findings, and develop an audit report.

c. Identify corrective actions for all findings, implement the corrective actions, and document when the findings have been corrected.

d. Maintain the two most recent compliance audit reports on file for potential regulatory inspection.

6.3.8 If KSC re-registers the RMP and a new process is required to be added, the owning organization or contractor shall complete an [Emergency Response Checklist](#) provided by the NASA EAB and submit the completed checklist to both the NASA EAB and [KSC Emergency Preparedness Office](#) to support RMP and KSC emergency response document updates. The purpose of this checklist is to gather information for emergency planning and response related to the new process.

6.4 Ozone Depleting Substance Requirements

6.4.1 ODS are used across KSC (in refrigeration systems, in fire suppression systems, as cleaning solvents, etc.) and must be properly managed according to CAA regulations. ODS are divided into two classes based on their potential to break down the stratospheric ozone layer: Class I and Class II. The EPA is phasing out the production and use of all ODS. Since Class I ODS have a higher ozone depleting potential than Class II ODS, Class I ODS are being phased out first. A list of Class I ODS can be found in [40 CFR 82 Appendix A](#). A list of Class II ODS can be found in [40 CFR 82 Appendix B](#).

6.4.2 Training Requirements

a. Personnel who test, maintain, service, repair, or dispose of stationary refrigeration and air conditioning systems shall complete certification training required under [Section 608 of the CAA](#).

b. Organizations and contractors shall submit the number of newly certified personnel to the NASA EAB as requested.

c. Personnel who test, maintain, service, repair, or dispose of motor vehicle air conditioner (MVAC) systems shall complete certification training required under [Section 609 of the CAA](#).

d. Personnel who test, maintain, service, repair, or dispose of halon-containing systems and equipment shall be trained IAW [40 CFR 82.270](#). Organizations and contractors can refer to the EPA's [Guidance for the EPA Halon Emission Reduction Rule \(40 CFR Part 82, Subpart H\)](#) document for additional guidance on halon training requirements.

e. Organizations and contractors that manage halon-containing systems or equipment shall provide initial and refresher training, document training course content, and maintain training records for their personnel.

6.4.3 Refrigerant System Repair and Maintenance Requirements

a. During maintenance and servicing activities, organizations and contractors shall take precautions to minimize and prevent releasing refrigerants into the atmosphere. The CAA prohibits individuals from knowingly venting refrigerants into the atmosphere while maintaining, servicing, repairing, or disposing of air conditioning and refrigeration equipment.

b. Personnel who test, maintain, service, repair, or dispose of stationary refrigeration and air conditioning systems shall do so as described in [Section 608 of the CAA](#).

c. Personnel who test, maintain, service, repair, or dispose of MVAC systems shall do so IAW [Section 609 of the CAA](#).

d. Organizations and contractors shall keep up-to-date service records for equipment containing 50 or more pounds of refrigerant for the previous three years showing the dates, types of service, and quantities of refrigerant added and purchased.

e. Organizations and contractors with commercial refrigeration equipment containing over 50 pounds of refrigerant shall repair all leaks within 30 days if the equipment is leaking at a rate which will exceed 35 percent of the total charge during a 12-month period (amount of refrigerant added in pounds/total system refrigerant charge in pounds X 365 days/smaller between number of days since refrigerant last added or 365 days X 100 percent greater than 35 percent).

f. Organizations and contractors with industrial refrigeration equipment containing over 50 pounds of refrigerant shall repair all leaks within 30 days if the equipment is leaking at a rate which will exceed 35 percent of the total charge during a 12-month period (amount of refrigerant leaked in pounds X 12 months/total system refrigerant charge in pounds/elapsed time of leak in months X 100 percent greater than 35 percent). In the event that an industrial refrigeration system shutdown is required or if the necessary repair parts are unavailable, organizations and contractors may have up to 120 days to complete the repair providing that leak verification testing is performed after the repair as required by [40 CFR 82.156](#).

g. Organizations and contractors operating comfort cooling equipment shall repair all leaks within 30 days if the unit leaks at a rate exceeding 15 percent of the total charge during a 12-month period (amount of refrigerant leaked in pounds X 12 months/total system refrigerant charge in pounds/elapsed time of leak in months X 100 percent greater than 15 percent).

h. Organizations and contractors operating industrial refrigeration or Heating, Ventilation, and Air Conditioning (HVAC) equipment containing over 50 pounds of refrigerant shall keep required release, maintenance, and repair records and make them available to the EAB or regulatory inspector upon request.

6.4.4 Halon System Repair and Maintenance Requirements

- a. During maintenance and servicing activities, organizations and contractors shall take precautions to minimize and prevent releasing halons into the atmosphere. The CAA prohibits individuals from knowingly venting halons into the atmosphere while maintaining, servicing, repairing, or disposing of halon-containing equipment.
- b. Personnel who test, maintain, service, repair, or dispose of halon-containing systems and equipment shall do so IAW the requirements in [40 CFR 82.250 – 82.270](#).
- c. Organizations and contractors shall submit the types, usage quantities, storage quantities, and purchase amounts of all ODS and ODS substitutes to the NASA EAB during annual data calls issued by the NASA EAB.

6.4.5 The NASA EAB shall enter this information into NETS for NASA HQ tracking and review.

6.4.6 Organizations and contractors shall submit PIR forms for releases of ODS according to the requirements in [Chapter 4](#) of this KNPR.

6.5 Asbestos Emission and Notification Requirements

6.5.1 Asbestos is categorized as a hazardous air pollutant because of adverse health effects on the lungs. EPA regulations for asbestos emissions, known as the asbestos National Emission Standard Hazardous Air Pollutants (NESHAP), are located in [40 CFR 61.140 - 61.157](#). FDEP regulations for asbestos removal are located in [FAC Chapter 62-257](#). Organizations and contractors shall conduct all facility and asbestos abatement projects as required by these asbestos regulations.

6.5.2 When a project involving the modification or demolition of a facility is proposed:

- a. The project initiator shall follow [KNPR 1840.19](#), in considering the potential hazards associated with Asbestos-Containing Building Material (ACBM).
- b. The project designer shall determine the presence of ACBM and the need for its disturbance or removal.
- c. The project designer shall ensure that current asbestos survey data from the KSC contractor's Web-based Asbestos Management Information System is used to determine the locations and quantities of identified ACBM and that this information is included in any statement of work or other work control package provided to the abatement contractor.

6.5.3 Organizations and contractors shall notify FDEP of individual demolition, renovation, and asbestos abatement projects using [FDEP Form 62-257.900\(1\)](#) no later than ten working days prior to the start of work if:

- a. The project involves removal of at least 260 linear feet, 160 square feet, or 35 cubic feet of Regulated Asbestos-Containing Material (RACM).
- b. The demolition or renovation project involves the disturbance of any load-supporting structural member regardless of RACM presence or absence.

(1) Demolition means the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations, or the intentional burning of any facility.

(2) Renovation means the alteration in any way of a facility or of one or more facility components.

c. Organizations and contractors shall submit copies of all FDEP notification forms to NASA EAB the same day. Submit a copy to the NASA Aerospace Medicine and Occupational Health Branch IAW the requirements of Section 3.3 of [KNPR 1840.19](#), specifically [FDEP Form 62-257.900\(1\)](#).

d. Organizations and contractors shall submit a revised notification form to FDEP if the amount of RACM changes by more than 20 percent.

6.5.4 The NASA EAB shall send out an annual data call to KSC organizations and contractors asking for anticipated demolition, renovation, and asbestos abatement projects for the upcoming calendar year.

6.5.5 Organizations and contractors shall submit a list of all projects involving both RACM and non-regulated asbestos-containing material (NRACM) and the estimated quantities of asbestos even if the project is below the FDEP notification thresholds listed above in [Section 6.5.3a](#).

6.5.6 The NASA EAB shall submit one notification form to FDEP covering all projects that fall below the individual project reporting thresholds listed above in [Section 6.5.3a](#) for KSC for the upcoming calendar year and a revised notification form to FDEP if the actual amount of RACM from those projects changes by more than 20 percent.

6.5.7 Organizations and contractors shall ensure that demolition, renovation, and asbestos abatement projects are in compliance with the following asbestos NESHAP requirements:

a. No visible emissions can be discharged to the outside air from the collection, processing, transport, and disposal of asbestos-containing waste materials (ACWM) during renovations or demolition activities. Visible asbestos-containing debris on the ground outside a removal job is considered a visible emission and a violation of the asbestos NESHAP.

b. At least one trained supervisor shall be present when asbestos-containing material is stripped, removed, disturbed, or otherwise handled.

c. Evidence of this training shall be posted and made available for inspection at the demolition, renovation, or asbestos abatement job site.

6.6 Air Permitting and Compliance Requirements at the Diverted Aggregate Reclamation and Collection Yard

6.6.1 The Diverted Aggregate Reclamation and Collection Yard (DARCY) is a cleared, 10-acre parcel adjacent to the KSC landfill on Schwartz Road. The DARCY provides a temporary storage and processing area for reuse of waste concrete, porcelain (toilets, sinks), and other aggregate-based materials such as river rock, limestone, and gravel.

6.6.2 This section addresses air permit and compliance requirements for the crushing operations at the DARCY. These requirements do not apply to screening, sifting, emplacement, removal, segregation, rebar removal, or sorting activities. All other DARCY use and environmental compliance requirements are located in [Chapter 26](#) of this KNPR.

6.6.3 The KSC Title V Air Operation Permit (Emission Unit 92) covers the emissions from the crushing activity. Crushing equipment operators shall possess an active General Air Operation Permit issued by FDEP for the portable crushing equipment in order to operate at the DARCY.

6.6.4 Crushing Equipment Operator Requirements

a. The crushing equipment operator shall provide a copy of the following information for each crushing event to the NASA EAB prior to mobilizing crushing equipment to the DARCY:

- (1) Current General Air Operation Permit for the crushing equipment.
- (2) Most recent visible emission test report for the crushing equipment.
- (3) Permitted operating rate for the crushing equipment.
- (4) Actual anticipated operating rate of the crushing equipment during operations at KSC.
- (5) A schematic of the unit operations comprising the crushing equipment, clearly identifying particulate matter emission points (i.e., conveyor transfer points, crushers, and screening operations).
- (6) A list of controls that are used at the particular unit operations.
- (7) Anticipated start up and completion dates of the crushing event.

b. The crushing equipment operator shall control unconfined emissions of particulate matter (dust) by using a water suppression system with spray bars located in such a manner as to confine emissions to where they occur (such as the feeder, crusher entrance, crusher exit, filter screen, and conveyor drop points).

c. The crushing equipment operator shall maintain an operating log onsite for all crushing operations with the following information:

- (1) Equipment operator name.
- (2) General Air Operation Permit number.
- (3) Operation start date.
- (4) Operation end date.
- (5) If an internal combustion engine is used onsite, engine manufacturer, model, serial number, horsepower or kilowatt rating, manufacturer date, EPA Tier classification (if applicable), and EPA Certificate of Conformity (if applicable).
- (6) Total gallons of each fuel consumed by the crushing equipment during the operation.

- (7) Total weight of each type of aggregate material crushed during the operation.
- d. The crushing equipment operator shall deliver the operating log to the NASA EAB before the crushing equipment is removed from the DARCY.
- e. In the event the crushing operation straddles two calendar years, the crushing equipment operator shall deliver separate operating logs for the activities performed during each calendar year to the NASA EAB.
- (1) The operating log for the first calendar year must be submitted by January 15th of the next calendar year.
- (2) The operating log for the second calendar year must be submitted before the crushing equipment is removed from the DARCY.
- (3) The operation end date on the operating log for the first calendar year will be December 31.
- (4) The operation start date on the operating log for the second calendar year will be January 1.
- f. The landfill operator shall provide the NASA EAB with annual Material Delivery records and Removed for Reuse records by January 15th for activities of the previous calendar year.

CHAPTER 7. CONSTRUCTION DEWATERING

7.1 Dewatering Permits

7.1.1 All dewatering activities at KSC, including the pumping out of manholes, sumps, and other structures in which groundwater may accumulate, shall follow KSC dewatering requirements.

7.1.2 Organizations and contractors shall not begin construction or operation of a dewatering system without approval and receipt of a permit, if required.

a. A dewatering activity may require coverage under SJRWMD's general permit by rule to withdraw ground or surface water anywhere within the District for short-term construction dewatering activities (excluding borrow operations), subject to the limiting conditions in [FAC 40C-2.042\(9\)](#) and Appendix I of the Applicant's Handbook: Consumptive Uses of Water.

b. A dewatering activity may require coverage under the FDEP's general permit by rule to discharge ground or surface water to a surface water body for short-term construction dewatering activities, subject to the limiting conditions in [FAC Chapter 62-621.300\(2\)](#).

c. Whether a permit is required or not, there may be additional conditions, restrictions, or requirements placed on the dewatering activity due to the proximity of groundwater contaminants. NASA EAB Remediation team lead will provide those requirements upon notification of proposed dewatering.

7.1.3 The organization, contractor, or other entity performing the dewatering is responsible for applying for all required permits.

7.1.4 Organizations and contractors are responsible for ensuring that the entity performing the dewatering activity abides by all permit conditions and regulations. Organizations and contractors shall inspect the project site, notify the NASA EAB of any potential issues or violations, and correct any issues or violations.

7.1.5 The NASA EAB shall perform compliance assistance, conduct inspections, and interpret permit conditions or regulatory requirements.

7.2 Dewatering Requirements

7.2.1 All dewatering projects at KSC shall:

a. Comply with guidance provided by the NASA Remediation Project Manager (PM) for potentially contaminated water.

b. Adhere to Best Management Practice (BMP) regarding turbidity and erosion control.

c. Not directly discharge to Outstanding Florida Waters, Class I or Class II water bodies.

d. Not be performed where there are chemicals or materials present in the discharge area that may contaminate the dewatering discharge.

7.2.2 Dewatering activities shall be considered separate projects when they involve distinctly separate dewatering operations (i.e., different geographic locations, different objectives). For example:

- a. Dewatering for trenching operations at two different construction locations shall be considered two separate dewatering activities.
- b. A series of manholes being simultaneously dewatered for a related project shall be one distinct dewatering operation.

CHAPTER 8. DRINKING WATER

8.1 Background and Regulatory Requirements

8.1.1 KSC operates and maintains a non-transient, non-community public water system (FDEP Public Water System Identification Number 3054024). KSC purchases water from the City of Cocoa and performs additional treatment onsite to ensure safe drinking water and protect the distribution system.

8.1.2 Operations and Maintenance

a. The KSC Drinking Water System must be operated and maintained IAW:

(1) [FAC Chapter 62-550](#)

(2) [FAC Chapter 62-602](#)

(3) [FAC Chapter 62-699](#)

(4) [FAC Chapter 64E-8](#)

b. All pipe materials and joints/fittings including gaskets utilized must be compatible with soil and/or groundwater contamination identified in SWMU areas to prevent chemical transmission into the water supply or reduced lifespan of the material.

c. The operator of the KSC Drinking Water System shall coordinate with the City of Cocoa when a compliance issue within the KSC Drinking Water System arises as a result of issues originating from the City of Cocoa water system.

d. Compliance and operational monitoring of the KSC Drinking Water System will be conducted according to the sampling plan developed by the KSC contractor providing sampling support.

e. Microbiological samples must be analyzed by the in-house laboratory.

f. Completed compliance reports must be provided to the NASA EAB by the fifth day of the month they are due to be submitted to FDEP. The Government will submit the required forms to FDEP.

g. The operator of the KSC Drinking Water System shall notify the appropriate State agencies, the Contracting Officer Representative (COR) or authorized representative(s), the [KSC Sanitation and Public Health Officer](#), and the SF (as applicable) immediately upon discovery of any sabotage, emergency, abnormal operating condition, or off-nominal circumstance IAW [FAC 62-555.350](#).

h. The operator of the KSC Drinking Water System shall provide notification to the COR or authorized representatives, SF, and FDEP on the status of the potable water system following any severe weather events including hurricanes and tropical storms.

i. The operator of the KSC Drinking Water System shall communicate “boil water” notices to the applicable parts of the KSC community as a result of an emergency on Center or if reported by the City of Cocoa Utilities Department. Note that under agreement with the FDEP, KSC issues “boil water” notices as “Do Not Drink” postings, tagging out affected areas.

j. If the KSC Drinking Water System is out-of-compliance, the operator of the KSC Drinking Water System shall perform necessary actions to bring the system back into compliance, notify personnel in affected areas of the distribution system, and post notices at—or remove from service—affected drinking water sources (such as fountains and sinks).

k. The NASA EAB shall develop any required public notices for out-of-compliance conditions, coordinate the public notices through the FDEP, and distribute the public notices to KSC personnel. Facility managers, in addition to the system operator, may be required to post the public notices in conspicuous locations and remove them after the system is returned to compliance.

l. For potable water line breaks considered to be non-malfunctions, the operator of the KSC Drinking Water System shall complete all necessary repairs and request the sampling contractor to collect a one-day bacteriological sample. These records are held internally and are not required to be submitted to the FDEP.

8.2 Planned Modifications of the Kennedy Space Center Drinking Water System

8.2.1 Organizations and contractors shall ensure that all projects that will modify the KSC Drinking Water System are designed according to Federal, state, and local regulations; codes; specifications; and standards.

8.2.2 Organizations and contractors shall not begin construction without approval and receipt of a permit, if required. Permit determination will be made by the NASA EAB.

8.2.3 The initiating organization or contractor shall ensure that the design information submitted to the FDEP in the permit application (and any subsequent submittals) is equivalent to the design information in the final work package, support request, or construction contract and that the entity performing the work abides by all applicable regulations and permit conditions.

8.2.4 Organizations and contractors shall prepare all required documents, drawings, forms, and other necessary instruments required by the permitting process from application to close out of the permit.

8.2.5 All prepared permit documents will be reviewed by the NASA EAB, signed by the Government when deemed complete, and returned to the preparer for their submittal to the FDEP. The initiating organization or contractor shall pay the application fee.

8.2.6 The Government will provide all bacteriological sampling services by the KSC contractor providing sampling support.

8.2.7 Projects not requiring permits must follow appropriate sanitary practices including chlorination, flushing, and operational bacteriological testing prior to placing projects into service.

8.2.8 Organizations and contractors are responsible for ensuring that the entity performing the work abides by all permit conditions and regulations. Organizations and contractors shall periodically inspect the project site, notify the NASA EAB of any potential issues or violations, and immediately correct any issues or violations.

8.2.9 The NASA EAB shall perform compliance assistance, conduct inspections, interpret permit conditions or regulatory requirements, and consult with regulatory agencies in support of a construction activity.

CHAPTER 9. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

9.1 Background and Regulatory Requirements

9.1.1 The NPDES program under the CWA is a permitting program to control the discharge of pollutants from any point source into waters of the U.S.

9.1.2 EPA has authorized the FDEP to implement the NPDES permitting program in the State of Florida. Therefore, the FDEP issues and enforces NPDES permits at KSC.

9.2 Stormwater Discharge from Construction Activity

9.2.1 Organizations and contractors shall obtain coverage under [FAC Chapter 62-621.300\(4\)](#) for projects that include land disturbance greater than one acre in area.

9.2.2 The initiating organization or contractor shall ensure that the design information submitted to the FDEP in the permit application (and any subsequent submittals) is equivalent to the design information in the final work package, support request, or construction contract and that the entity performing the work abides by all applicable regulations and permit conditions.

9.2.3 Organizations and contractors shall prepare all required documents, drawings, forms, and other necessary instruments required by the permitting process from application to close out of the permit.

9.2.4 All prepared permit documents will be reviewed by the NASA EAB and returned to the preparer for submittal to the FDEP. The initiating organization or contractor shall pay the permit application fee.

9.2.5 Organizations and contractors are responsible for ensuring that the entity performing the work abides by all permit conditions and regulations. Organizations and contractors shall inspect the project site, notify the NASA EAB of any potential issues or violations, and correct any issues or violations.

9.2.6 The responsible organization or contractor shall abide by all applicable regulations; abide by all general and sector-specific permit conditions including the development, implementation, and maintenance of a Stormwater Pollution Prevention Plan (SWPPP); perform all required inspections and recordkeeping; and take appropriate measures to properly manage site stormwater.

9.3 Stormwater Discharge Associated with Industrial Activity

9.3.1 Organizations and contractors shall obtain coverage under [FAC Chapter 62-621.300\(5\)](#) for operations and activities that are covered by this permit.

9.3.2 Under certain circumstances, a particular regulated activity may be eligible to be exempt from permitting under the NPDES stormwater program (see [Section 9.4](#) of this KNPR).

9.3.3 The initiating organization or contractor shall ensure that the design information submitted to the FDEP in the permit application (and any subsequent submittals) is equivalent to the design information in the final work package, support request, or construction contract and that the entity performing the work abides by all applicable regulations and permit conditions.

9.3.4 Organizations and contractors shall prepare all required documents, drawings, forms, and other necessary instruments required by the permitting process from application to close out of the permit.

9.3.5 All prepared permit documents will be reviewed by the NASA EAB and returned to the preparer for their submittal to the FDEP. The initiating organization or contractor shall pay the permit application fee.

9.3.6 Organizations and contractors are responsible for ensuring that the entity performing the work abides by all permit conditions and regulations. Organizations and contractors shall inspect the project site, notify the NASA EAB of any potential issues or violations, and correct any issues or violations.

9.3.7 The responsible organization or contractor shall abide by all applicable regulations; abide by all general and sector-specific permit conditions including the development, implementation, and maintenance of an SWPPP; perform all required inspections and recordkeeping; and take appropriate measures to properly manage site stormwater.

9.3.8 If the permit or SWPPP requires sampling results or discharge monitoring reports to be submitted to FDEP:

- a. The responsible organization or contractor shall coordinate with the NASA EAB sampling contractor to perform the sampling and analysis.
- b. The NASA EAB shall submit the sampling results and reports to FDEP.

9.4 Obtaining a Conditional No Exposure Exclusion to National Pollutant Discharge Elimination System Stormwater Industrial Activity Permits

9.4.1 The organization or contractor shall establish that no industrial materials or activities are exposed to precipitation or runoff by meeting the criteria for no exposure outlined in [FAC Chapter 62-620.100\(2\)\(o\)](#).

9.4.2 The organization or contractor shall apply for the exemption by completing the [FDEP Form 62-620.910\(17\)](#) and submitting it to the NASA EAB for review and comment.

9.4.3 If the exemption is approved by FDEP, the responsible organization or contractor shall maintain the site conditions that allowed the exemption.

9.4.4 Organizations and contractors shall renew No Exposure Certifications every five years by following the process described in this section.

CHAPTER 10. STORMWATER MANAGEMENT SYSTEMS

10.1 Background and Regulatory Requirements

10.1.1 The State of Florida developed the Environmental Resource Permit (ERP) Program to regulate activities that would affect wetlands, alter surface water flows, or contribute to water pollution.

10.1.2 The Florida ERP Program regulates activities involving the alteration of surface water flows. This includes new activities that generate stormwater runoff from new construction as well as dredging and filling in wetlands and other surface waters. For KSC, these regulations often require the construction and maintenance of surface water management systems to control stormwater runoff.

10.2 Operations and Maintenance

10.2.1 The permitted stormwater management systems at KSC shall be operated and maintained IAW [FAC Chapter 40C-4](#).

10.2.2 Compliance inspections shall be conducted by the contractor providing operations and maintenance (O&M) oversight of the KSC stormwater systems.

10.2.3 All compliance issues will be reported to the NASA EAB. Major compliance issues, such as the washout of stormwater pond berms, will be reported to the SJRWMD by the NASA EAB. Minor compliance issues, such as grass needing to be mowed, skimmers needing to be repaired, or sediment build-up, shall be handled as routine maintenance issues.

10.2.4 The contractor providing O&M oversight of the KSC stormwater systems shall:

- a. Perform necessary actions to bring the system back into compliance.
- b. Provide notification to the COR (or authorized representatives) and NASA EAB on the status of the KSC stormwater systems following any severe weather events including hurricanes and tropical storms.

10.3 Projects That Require Stormwater Management Systems

10.3.1 Organizations and contractors shall ensure that all projects that will modify existing or create new stormwater management systems are designed according to Federal, state, and local regulations; codes; specifications; and standards.

10.3.2 Organizations and contractors shall not begin construction without approval and receipt of a permit, if required. Permit determinations will be made by the NASA EAB.

10.3.3 Organizations and contractors shall prepare all required documents, drawings, forms, and other necessary instruments required by the permitting process from application to close out of the permit.

10.3.4 All prepared permit documents will be reviewed by the NASA EAB, signed by the Government when deemed complete, and returned to the preparer for their submittal to the SJRWMD. The initiating organization or contractor shall pay the permit application fee.

10.3.5 The initiating organization or contractor shall ensure that the design information submitted to the SJRWMD in the permit application (and any subsequent submittals) is equivalent to the design information in the final work package, support request, or construction contract and that the entity performing the work abides by all applicable regulations and permit conditions.

10.3.6 Organizations and contractors are responsible for ensuring that the entity performing the work abides by all permit conditions and regulations. Organizations and contractors shall periodically inspect the project site, notify the NASA EAB of any potential issues or violations, and immediately correct any issues or violations.

10.3.7 The NASA EAB shall perform compliance assistance, conduct inspections, interpret permit conditions or regulatory requirements, and consult with regulatory agencies in support of a construction activity.

CHAPTER 11. DOMESTIC WASTEWATER

11.1 Background and Regulatory Requirements

11.1.1 The FDEP administers programs, promulgates regulations, and issues permits concerning domestic wastewater disposal in order to protect public health and water resources.

11.1.2 The KSC domestic wastewater collection and transmission system is regulated by the FDEP. This system transports raw domestic wastewater to an SF-operated domestic wastewater treatment plant at CCSFS that operates under a No Discharge NPDES domestic wastewater permit.

11.2 Operations and Maintenance

11.2.1 The KSC Domestic Wastewater System shall be operated and maintained IAW:

- a. [FAC Chapter 62-604](#)
- b. [FAC Chapter 64E-6](#)

11.2.2 All pipe materials and joints/fittings, including gaskets used, shall be compatible with soil and/or groundwater contamination identified in SWMU areas to prevent chemical transmission into the wastewater supply or reduced lifespan of the material.

11.2.3 The operator of the KSC Domestic Wastewater System shall notify the appropriate state agencies, the COR or authorized representative(s), the [KSC Sanitation and Public Health Officer](#), and the SF (as applicable) immediately upon discovery of an abnormal event.

- a. Sewage spills of less than 1,000 gallons shall be reported by the operator of the KSC Domestic Wastewater System to the FDEP as soon as practical, but no later than 24 hours after discovery.
- b. Sewage spills of 1,000 gallons or more, or where the public health or the environment may be endangered, shall be reported by the operator of the KSC Domestic Wastewater System to the State Watch Office's toll-free number, 1-800-320-0519.

11.2.4 The operator of the KSC Domestic Wastewater System shall provide notification to the COR or authorized representatives, SF, and FDEP on the status of the KSC Domestic Wastewater system following any severe weather events including hurricanes and tropical storms.

11.2.5 The operator of the KSC Domestic Wastewater System shall perform necessary actions to remediate sewage spills and repair line breaks.

11.2.6 Organizations and contractors shall not discharge non-domestic wastewater into a KSC domestic wastewater collection and transmission system unless authorized by the operator of the KSC Domestic Wastewater System and the SF's domestic wastewater treatment plant operator.

11.3 Planned Modifications of the Kennedy Space Center Domestic Wastewater System

11.3.1 Organizations and contractors shall ensure that all projects that will modify the KSC Domestic Wastewater System are designed according to Federal, state, and local regulations; codes; specifications; and standards.

11.3.2 Organizations and contractors shall not begin construction without approval and receipt of a permit, if required. This determination will be made by the NASA EAB.

11.3.3 The initiating organization or contractor shall ensure that the design information submitted to the FDEP in the permit application (and any subsequent submittals) is equivalent to the design information in the final work package, support request, or construction contract and that the entity performing the work abides by all applicable regulations and permit conditions.

11.3.4 Organizations and contractors shall prepare all required documents, drawings, forms, and other necessary instruments required by the permitting process from application to close out of the permit.

11.3.5 All prepared permit documents will be reviewed by the NASA EAB and signed by the Government when deemed complete. The Government will deliver the submittal to the SF for their signature. Once signed by the SF, the submittal will be returned to the preparer for submittal to the FDEP. The initiating organization or contractor shall pay the permit application fee.

11.3.6 Organizations and contractors are responsible for ensuring that the entity performing the work abides by all permit conditions and regulations. Organizations and contractors shall periodically inspect the project site, notify the NASA EAB of any potential issues or violations, and immediately correct any issues or violations.

11.3.7 The NASA EAB shall perform compliance assistance, conduct inspections, interpret permit conditions or regulatory requirements, and consult with regulatory agencies in support of construction activity.

11.3.8 The completed work shall not be placed into service until approved by the FDEP.

11.4 Onsite Sewage Treatment and Disposal Systems

11.4.1 The installation and use of an Onsite Sewage Treatment and Disposal System (OSTDS) is prohibited at KSC when connection to a domestic wastewater collection and transmission system is feasible.

11.4.2 The operator of the KSC Domestic Wastewater System shall operate, maintain, abandon, and repair all existing OSTDS IAW all applicable state rules and regulations.

CHAPTER 12. INDUSTRIAL WASTEWATER

12.1 Background and Regulatory Requirements

12.1.1 State of Florida regulations define industrial wastewater as any wastewater that is not classified as domestic wastewater. Since industrial wastewater has the potential to contain various pollutants at various concentrations, all discharges to the environment are regulated. Examples of industrial wastewater at KSC are:

- a. Launch deluge water
- b. Industrial process water
- c. Wash water
- d. Rinse water
- e. Sump water
- f. Stormwater captured in secondary containment structures
- g. Air conditioning system condensate
- h. Compressor condensate
- i. Cooling tower water
- j. Groundwater dewatering effluent
- k. Water flushed from potable and drinking water systems

12.1.2 Organizations and contractors shall properly collect, evaluate, manage, treat, and dispose of industrial wastewater according to Federal regulations, state regulations, and the requirements of this KNPR.

12.2 Regulatory Requirements

12.2.1 Industrial wastewater shall be handled as a hazardous or controlled waste and properly collected, evaluated, managed, treated, and disposed of according to Federal regulations, state regulations, and the requirements of [Chapter 13](#) of this KNPR.

12.2.2 A PWQ shall be submitted to the KSC Waste Management Office (WMO) for all potentially hazardous waste streams IAW [Section 13.6.2](#). The KSC WMO will prepare a Technical Response Package (TRP), which will authorize one of the following methods of wastewater disposal:

- a. Containerization (usually in drums or tanks) for off-Center shipment and disposal by the waste management contractor at an approved disposal facility (some form of onsite treatment may or may not be required prior to shipment).

- b. Pick up and transportation (usually in tanker trucks) by the waste management contractor for processing and disposal at the CCSFS Trident wastewater pretreatment plant.
- c. Discharge to the domestic wastewater system under an approval from the operator of the KSC wastewater system and the AF domestic wastewater treatment plant operator (some form of treatment at the facility may or may not be required prior to discharge).
- d. Collection, treatment, and discharge to the environment at a facility under an industrial wastewater permit.
- e. Discharge to the environment at a facility with minimal or no treatment (approval by the NASA EAB or FDEP may be required).

12.3 Industrial Wastewater Permits

12.3.1 Organizations and contractors shall ensure that all projects are designed according to Federal, state, and local regulations, codes, specifications, and standards.

12.3.2 Organizations and contractors shall not begin construction without approval and receipt of a permit, if required.

12.3.3 The initiating organization or contractor shall ensure that the design information submitted to the FDEP in the permit application (and any subsequent submittals) is equivalent to the design information in the final work package, support request, or construction contract and that the entity performing the work abides by all applicable regulations and permit conditions.

12.3.4 Organizations and contractors shall prepare all required documents, drawings, forms, and other necessary instruments required by the permitting process from application to close out of the permit.

12.3.5 All prepared permit documents will be reviewed by the NASA EAB and signed by the Government when deemed complete. Once signed, the submittal will be returned to the preparer for submittal to the FDEP. The initiating organization or contractor shall pay the permit application fee.

12.3.6 Organizations and contractors are responsible for ensuring that the entity performing the work abides by all permit conditions and regulations. Organizations and contractors shall periodically inspect the project site, notify the NASA EAB of any potential issues or violations, and immediately correct any issues or violations.

12.3.7 The NASA EAB shall perform compliance assistance, conduct inspections, interpret permit conditions or regulatory requirements, and consult with regulatory agencies in support of a construction activity.

12.3.8 The completed work shall not be placed into service until approved by the FDEP.

12.4 Industrial Wastewater Permit Operations

12.4.1 Organizations and contractors responsible for industrial wastewater permits shall:

- a. Operate, maintain, and repair all industrial wastewater facilities IAW all applicable Federal and state regulations and permit conditions.
- b. Ensure that all industrial wastewater discharges meet regulatory and permit conditions and limits.
- c. Develop and maintain procedures to ensure permit compliance.
- d. Inspect facilities and discharges to ensure permit compliance.
- e. Conduct all required sampling, monitoring, and analysis (or request the NASA EAB Sampling Support contractor to perform).
- f. Maintain all operational records, data, and logs required by regulation or the permit.
- g. Prepare and submit all required operational, monitoring, and regulatory reports to the NASA EAB at least seven calendar days prior to the due date.
- h. Immediately notify the NASA EAB of any potential permit violations, deficiencies, or non-compliance items.
- i. Immediately correct violations, deficiencies, or non-compliance items.
- j. Not communicate directly with FDEP unless approved by the NASA EAB.

12.4.2 The NASA EAB shall:

- a. Review all operational, monitoring, and regulatory reports submitted by the responsible organization or contractor for accuracy and submit them to the FDEP by the due date.
- b. Conduct periodic inspections of permitted facilities, activities, and discharges.
- c. Request and monitor corrective actions for any violations, deficiencies, or non-compliance items.
- d. Coordinate and respond to inquiries from regulatory agencies concerning sampling data, monitoring data, and regulatory reports.
- e. Verify that adequate procedures have been developed by the responsible organization or contractor to ensure compliance with regulatory and permit requirements.
- f. Report apparent permit violations to the appropriate regulatory agencies.

CHAPTER 13. HAZARDOUS AND CONTROLLED WASTE

13.1 Background and Regulatory Requirements

13.1.1 The Federal Government and the State of Florida have passed laws and promulgated regulations regarding the identification, transportation, treatment, storage, and disposal of hazardous and controlled waste.

13.1.2 The Federal RCRA administered by the EPA regulates the identification, transportation, treatment, storage, and disposal of solid and hazardous wastes. EPA's implementing regulations for RCRA are located in [40 CFR 260-265](#) and [40 CFR 266-279](#).

13.1.3 The Federal TSCA is administered by the EPA and regulates the manufacture, processing, distribution in commerce, use, marking, storage, and disposal of PCB. EPA's implementing regulations for PCBs are located in [40 CFR 761](#).

13.1.4 The State of Florida regulations for hazardous waste management and used oil management are FAC 62-730, and FAC 62-710, respectively.

13.1.5 The EPA has delegated authority to the FDEP to implement and enforce RCRA regulations and issue hazardous waste permits in the State of Florida. Therefore, the FDEP regulates, inspects, and issues permits to KSC for hazardous and controlled waste management.

13.1.6 KSC is a large quantity generator of hazardous waste. Consequently, all wastes generated on KSC property are subject to stricter regulatory requirements for storage, labeling, management, and disposal. Industry norms and waste management procedures practiced by contractors not on KSC property may not be acceptable on KSC property. All activities at KSC are subject to inspection and enforcement by Federal and state regulatory agencies.

13.1.7 Organizations and contractors shall properly identify, manage, and dispose of all hazardous and controlled waste according to the applicable Federal, state, and local regulations and the requirements of this KNPR.

13.1.8 Organizations and contractors shall develop general and site-specific waste management procedures and requirements for their operations to ensure compliance with applicable Federal, state, and local regulations and the requirements of this KNPR.

13.1.9 Organizations and contractors shall reduce the volume and toxicity of hazardous wastes to the extent economically practicable. [Chapter 26](#) of this KNPR provides requirements for waste minimization as required by the RCRA, the 1984 Hazardous and Solid Waste Amendments to RCRA, and the Pollution Prevention Act.

13.1.10 The KSC WMO shall characterize, pick up, and dispose of all hazardous and controlled waste generated at KSC. More detailed guidance for requesting KSC WMO support can be obtained from [EVS-P-0001](#).

13.1.11 All spills and releases of hazardous and controlled waste shall be reported according to the requirements of [Chapter 4](#) in this KNPR.

13.1.12 All communication and interface with regulatory agencies regarding hazardous and controlled waste management and disposal shall be coordinated through and performed by the NASA EAB.

13.1.13 KSC's Web-based [Waste Management System \(WMS\)](#) is used to request sampling, submit PWQs, evaluate waste streams, and facilitate the waste characterization process. All KSC organizations and contractors must manage all hazardous, controlled, and UW through WMS and the waste site module of WMS.

13.2 Kennedy Space Center Treatment, Storage, and Disposal Facility

13.2.1 KSC operates a hazardous waste treatment, storage and disposal facility (TSDF) under a permit issued by the FDEP. The TSDF permit allows for temporary storage (up to one calendar year) of hazardous wastes generated at KSC.

13.2.2 The KSC WMO contractor shall operate the TSDF and maintain all required records according to all applicable Federal and state regulations and permit conditions.

13.2.3 The KSC WMO contractor shall prepare and submit the TSDF permit renewal application packages to the NASA EAB.

13.2.4 The NASA EAB shall sign and submit the TSDF permit renewal application packages to the FDEP.

13.2.5 The KSC WMO contractor shall prepare and submit all KSC biennial hazardous waste reports to the NASA EAB for review.

13.2.6 The NASA EAB shall sign and submit the KSC biennial hazardous waste reports to the FDEP.

13.3 Hazardous and Controlled Waste Storage Locations

13.3.1 Organizations and contractors shall:

- a. Activate and deactivate hazardous or controlled waste storage locations in the waste site module of the WMS. The waste site module maintains all Central Accumulation Areas weekly inspections and is part of the waste container tracking system at KSC.
- b. Establish and maintain Central Accumulation Areas hazardous waste storage areas, hazardous waste Satellite Accumulation Areas (SAA) and Controlled Waste Areas as needed to properly store and manage the hazardous wastes generated by their operations and activities.
- c. Respond on time to data calls from the NASA EAB requesting comprehensive lists of hazardous and controlled waste storage locations.

13.3.2 Other Waste Stream Locations

- a. PCB waste (See [Chapter 19](#))
- b. Asbestos waste (See [Section 13.20](#))

- c. UW (See [Section 13.13](#))
- d. Used oil (See [Section 13.16](#))
- e. Used oil filters (See [Section 13.17](#))

13.4 Compliance Inspections

13.4.1 The NASA EAB shall:

- a. Conduct periodic compliance inspections of waste storage locations, management processes, and records to ensure compliance with regulatory requirements and the requirements of this KNPR.
- b. Attend regulatory agency compliance inspections and respond to regulatory agencies regarding potential non-compliance issues or violations.

13.4.2 Organizations and contractors shall:

- a. Attend compliance inspections and provide records to inspectors.
- b. Implement corrective actions to address any non-compliance issues, violations, deficiencies, and findings identified during inspections, and provide corrective action information and status to the NASA EAB when requested.

13.5 Abandoned Waste and Materials

13.5.1 Upon discovery of a potentially abandoned waste/material, the discoverer shall make a reasonable attempt to locate the waste generator/material owner by checking with personnel in nearby area/facilities or examining labels.

- a. Assistance may be obtained from the assigned Facility Manager, who may be familiar with the source of the material.
- b. If the container has a hazardous waste label or a controlled waste label, a process waste code may be located on the label. If so, contact the KSC WMO, who may be able to assist in determining the waste generator and location.

13.5.2 If the waste generator/material owner cannot be located, or if the container shows signs of leakage, the discoverer shall immediately report the abandoned waste/material by calling 911, using the same reporting conventions for non-emergency spills found in the [KSC Emergency Reference Guide](#), Section 4.2, and reporting that he or she has found abandoned waste/material. Discoverer will indicate if the container shows signs of leakage.

13.5.3 Due to health and safety concerns, discoverers shall not move waste/material or open containers to determine contents.

13.5.4 Upon reporting to 911, the KSC spill response team shall take control of the abandoned waste/material and perform follow-up reporting IAW [Chapter 4](#) of this KNPR.

13.6 Waste Evaluation and Sampling

13.6.1 KSC's Web-based [WMS](#) is used to request sampling, submit PWQs, evaluate waste streams, and facilitate the waste characterization process. The WMS stores PWQ information and tracks the status of PWQ submittals and can be used to recertify PWQs.

13.6.2 Organizations and contractors shall:

- a. Submit a PWQ through WMS for all potentially hazardous or controlled waste streams. The PWQ is used to evaluate and characterize the waste streams. PWQs will be submitted prior to generating the waste, if there is sufficient information available to evaluate and characterize the waste.
- b. Submit relevant waste evaluation information or data (such as Safety Data Sheets [SDS], sampling results, process knowledge, etc.) with the PWQ. If sampling and analysis is required to characterize the waste stream or complete the PWQ, the generating organization or contractor shall conduct the sampling and analysis or request sampling and analysis support from the KSC ESAM Office.
- c. Re-certify PWQs annually and submit revised PWQs if the waste generating process has changed or if there is variability in waste characteristics.
- d. Place [KSC Form 29-759](#) (IAW the requirements found below in [Section 13.7](#) of this KNPR) on the waste container pending completion of the sampling, analysis, and waste evaluation process.

13.6.3 The KSC WMO shall evaluate PWQs, characterize the waste streams, determine whether wastes are hazardous waste or controlled waste, and issue a TRP back to the generating organization or contractor with the following information and guidance:

- a. Hazardous waste or controlled waste determinations
- b. Controlled waste classifications
- c. Sampling and analysis parameters
- d. Packaging and container requirements
- e. Labeling requirements

13.6.4 Organizations and contractors shall manage, package, and label wastes according to TRP instructions.

13.7 Hazardous Waste Determination in Progress Requirements

13.7.1 The HWDIP is a process, including a specific KSC label, that has been partnered with and approved by the FDEP to meet regulatory requirements. This process is used when an unknown waste stream, new waste stream, or established waste stream with variable characteristics or compositions is generated.

13.7.2 A variable waste is a waste that may change between hazardous waste or non-hazardous waste from batch to batch (such as blast media or anti-freeze) and the generator has been previously provided PWQs/TRPs for both types of waste.

13.7.3 The HWDIP label is used to adequately document, identify, and track dates in the generation, sampling, characterization, and evaluation process. Organizations and contractors shall place a KSC WMO container number and [KSC Form 29-759](#) on the waste container and fill out the top part of the label (identify the contents of the waste container, point of contact, phone number, and organization) when waste is first placed in the container.

13.7.4 Containers with HWDIP labels shall be managed as if they were hazardous waste and be stored in a SAA or Central Accumulation Area. As a BMP, smaller accumulation containers should be used to collect enough waste for a representative sample.

13.7.5 Organizations and contractors shall mark the dates on the HWDIP label as follows:

- a. Waste Generated Date: Date when generated waste is first placed in the container.
- b. Sample Requested Date: The date when an adequate amount of waste has been accumulated for a representative sample and sampling has been requested. Once the container has been sampled and sealed, additional wastes shall be placed in a new container.
- c. Sampled Date: The date when the waste characterization samples were collected. The samples shall be collected within five work days of the Sample Requested Date.
- d. Analysis Received Date: The date when the requester receives the laboratory analysis report. Since the standard laboratory turnaround time to analyze samples is 14 work days, the Analysis Received Date should not exceed 20 work days from the Sampled Date.
- e. PWQ Submitted Date: The date when the requester submitted the PWQ to the KSC WMO. The PWQ shall be submitted no more than 5 work days after the Analysis Received Date.

13.7.6 Within 7 workdays of receiving the TRP, organizations and contractors shall replace the HWDIP label with the label(s) indicated in the TRP. TRPs are generally issued by the KSC WMO within 14 work days of PWQ submission.

13.7.7 If a HWDIP waste at a Central Accumulation Area is determined to be hazardous, the Accumulation Start Date (ASD) Date when generated waste is first placed in the container. This only applies to new waste streams and not to waste streams with variable characteristics.

13.7.8 For waste streams with variable characteristics which are determined to be hazardous, the ASD for the waste will be the date the laboratory analysis report is received.

13.7.9 The HWDIP waste characterization process (Waste Generated Date to TRP receipt) described above must not take more than 60 calendar days unless there is documentation explaining the delay.

13.8 Hazardous and Controlled Waste Container Requirements

13.8.1 Waste generators accumulating hazardous wastes shall comply with the packaging requirements identified in the TRP for that waste stream.

13.8.2 New, unused, or reconditioned containers will be used for the accumulation of hazardous waste. Stainless steel drums used only for accumulation and storage of fuel and oxidizer wastes may be reused for the same commodity without rinsing or reconditioning.

13.8.3 Containers must meet United Nations specification performance-oriented packaging standards unless otherwise authorized in [49 CFR 173](#). The appropriate standards, including special permits or exemptions, are included in the TRP. TRP packaging requirements are based upon chemical compatibility, ease of handling, and minimizing the risk of leaks and spills. Exceptions to TRP packaging references may be allowed by KSC WMO on a case-by-case basis.

13.8.4 Bulging drums may represent a potential for fire, explosion, or release of toxic gases. Once a bulging drum is discovered, the individual should leave the area immediately and contact 911 to report the emergency and the condition of the drum.

13.8.5 Containers shall be kept in good condition and free of rust and corrosion. If a container becomes deteriorated, the contents must be transferred to a new container as specified in the TRP or placed into a salvage container on a case-by-case basis after consultation with KSC WMO.

13.8.6 Containers storing hazardous waste shall be closed at all times except during the addition, removal, or transfer of waste.

13.8.7 Funnels and closures (e.g., bungs and lids) shall be considered closed if installed hand tight, so that the gasket contacts the seat and no waste spills or leaks if the container is tipped.

13.8.8 Hazardous materials containers must be provided for pickup fitted with the manufacturer's original closures. Waste Management will secure the closures as called out in the manufacturer's instructions prior to providing transportation.

13.8.9 Containers may be equipped with safety relief valves that open periodically to relieve excess pressure. Recommend use of five pounds per square inch (psi) Factory Mutual Approved Standard safety relief valves.

13.8.10 Visual inspections shall be performed for holes, gaps, or open spaces that may allow volatile emissions to escape to the atmosphere.

13.8.11 Organizations and contractors shall not fill waste containers to 100 percent capacity and must allow adequate headspace for expansion to prevent seepage or container bulging.

13.8.12 Organizations and contractors shall comply with TRP requirements regarding container filling maximums for safe transportation and easy handling.

13.8.13 Empty containers located in SAAs, Central Accumulation Areas and Controlled Waste Areas must display an "EMPTY" label.

13.8.14 "EMPTY" labels must be placed on the upper third of the container and be plainly visible when the container is stored.

13.8.15 Pallets or large numbers of empty containers can be labeled as "EMPTY" as a group if they are secured together.

13.8.16 Empty containers of hypergol oxidizer or fuel rinsate waste, which are returned to the generator for reuse, must have "EMPTY" labels placed over the bung.

13.8.17 Organizations and contractors shall have empty containers picked up for recycling by submitting a WSR to the KSC WMO. Unless purged of all hazardous materials residue, all previous markings (including waste labels) must be retained to identify previous contents and associated hazards.

13.9 Labeling and Marking Requirements

13.9.1 Containers must be properly labeled and marked according to regulatory requirements and the information given in the TRP.

a Markings on labels must be legible.

b "Spill pallet lids, salvage containers, and overpacks used containers used for containment must be labeled as needed, i.e., "Hazardous Waste" or "Controlled Waste" or "Universal Waste."

c These labels must be placed facing out visible to approaching personnel. New waste streams without a TRP will be labeled with a HWDIP until a TRP has been issued.

d Small containers such as lab pack items must be clearly labeled with [KSC RO83 Hazardous Waste Lab Pack](#), and DOT label identifying the primary hazard as provided in TRP instructions.

13.9.2 Containers marked with the DOT 9 N.O.S. label must also be labeled with [KSC Form 50-359](#) (Toxic) label while stored at a SAA or Central Accumulation Area and must be removed when container is picked for transport to the KSC TSDF.

13.9.3 Temporary or incorrect labels (such as "Empty" or "HWDIP") must be removed when the known status of the container or waste changes (e.g., adding waste to the drum or upon receipt of the TRP or the laboratory analysis).

13.9.4 The following are examples of incorrect labeling:

a. Striking out or writing over any information or entries on hazardous waste labels such as the address, ASD, EPA waste codes, or DOT proper shipping name.

b. Covering a pre-existing label with a new label. If a label is changed, the existing label must be removed first.

c. Adding labels or information that conflicts with the labels required by the TRP.

d. Labels placed anywhere other than the upper third of the container or drum.

- e. Hazard class labels placed further than six inches away from the hazardous waste label.

13.10 Central Accumulation Area Hazardous Waste Storage

13.10.1 Personnel with waste management responsibilities at Central Accumulation Area hazardous waste storage areas shall complete classroom and on-the-job training as required by [40 CFR 262.17](#), Personnel Training, and as needed to properly manage hazardous waste at KSC.

- a. Employees new to Central Accumulation Area hazardous waste storage area management shall complete the training within the first 3 months.
- b. Employees with waste management responsibilities at Central Accumulation Area hazardous waste storage areas shall complete refresher training within 13 months of the last date of training.
- c. Items to be covered in the site-specific annual training includes the following:
 - (1) Understand the waste determination process and know they have generated a hazardous waste
 - (2) Understand how waste must be managed according to the RCRA regulations – ensure proper handling
 - (3) Understand and be able to implement the site specific contingency plan – [40 CFR 262 Subpart M](#)
- d. All hazardous wastes are, by definition, hazardous materials, and employees whose actions directly affect the safe transportation of hazardous materials must be trained IAW [49 CFR 172 Subpart H](#). Specific actions include filling, marking, and labeling of hazardous waste containers.

13.10.2 Waste storage areas shall have a posted contingency plan that meets the requirements of [40 CFR 262](#), and describes actions to be taken by facility personnel in response to evacuations, fires, explosions, or releases of hazardous wastes.

- a. Contingency plans must include the following:
 - (1) References to [KNPD 8710.1](#), [KNPR 8715.2](#), and [KDP-KSC-P-3008](#)
 - (2) A method of revision tracking
 - (3) Appropriate emergency phone numbers
 - (4) The name and phone number of a primary and alternate site contact who are personally familiar with stored wastes and their characteristic.
 - (5) All emergency equipment (fire control equipment, spill control equipment, communication and alarm systems, and decontamination equipment) including a description of each item's capabilities

- b. Emergency equipment shall be reviewed by KSC Protective Services whenever the facility changes in its design, construction, operation, maintenance, or other circumstance in a way that materially increases the potential for fires, explosions, or releases of hazardous waste.
- c. Any associated changes to the list of emergency equipment or changes to the list of site contacts will be posted at the site.
- d. An evacuation plan describing signals for area personnel to begin evacuation, evacuation routes, alternative evacuation routes, and marshaling areas. Where applicable, excerpts from emergency action plans developed under [KNPR 8715.3](#) must be used for this purpose.

13.10.3 Central Accumulation Area hazardous waste storage areas must meet [40 CFR 262 Subpart M](#) and all hazardous waste containers must be marked with the proper ASD.

- a. For new waste streams, the ASD is the date the TRP was received from the KSC WMO.
- b. For recurring waste streams, the ASD is the date waste is first added to the container.
- c. For containers transferred from SAAs, the ASD is the date of transfer.
- d. Hazardous wastes must not be stored at Central Accumulation Area hazardous waste storage areas for longer than 90 days based on the ASD.
- e. Organizations and contractors shall refer to [EVS-P-0001](#) for details regarding waste pickup services and procedures.
- f. Organizations and contractors shall submit waste pickup support requests to the KSC WMO no later than day 75 (day 60 for hypergolic wastes) to provide scheduling flexibility and to resolve pickup discrepancies.
- g. Emergency waste pickups are available for hazardous waste that is approaching accumulation time limits. Organizations and contractors shall submit an emergency waste pickup support request to the KSC WMO and confirm the KSC WMO received the request.
- h. Organizations and contractors shall keep documentation to demonstrate that hazardous waste tanks are emptied at least once every 90 days.
- i. If unforeseen circumstances prevent pickup within the 90-day limit, the organization or contractor shall immediately, by day 85, contact the NASA EAB who will request an extension from the FDEP.
- j. Organizations and contractors shall inspect Central Accumulation Area hazardous waste storage areas at least weekly according to the requirements in [40 CFR 262](#) and [FAC 62-730.160](#).
- k. During Central Accumulation Area hazardous waste storage area inspections, organizations and contractors shall:
 - (1) Check the availability and condition of any security devices.

- (2) Ensure required signs are posted, unobstructed, and legible.
- (3) Check the availability, condition, and functionality of safety equipment.
- (4) Check the area and containers for waste releases.
- (5) Check all waste containers for deterioration, corrosion, and signs of physical damage.
 - (a) Containers shall not have severe rust, visible pitting, flaking, or beaded metal.
 - (b) Containers shall not have dents or creases that compromise the integrity or significantly alter the original shape of the container.
 - (c) Containers shall not have paint or other coatings applied to obscure damage.
- (6) Check waste drum bungs and lids for tightness (drum lids and bungs shall be tightly closed when not in use).
- (7) Check hazardous waste container ASDs and verify that the date is not near the 90-day limit.
- (8) Check hazardous waste container labels and ensure they are properly completed.
- (9) Ensure that adequate fire suppression equipment is available, compatible with the types of waste being stored, and regularly inspected and maintained by fire protection personnel.
- (10) For ignitable and reactive waste, verify that sources of ignition are absent and that "No Smoking" signs are conspicuous.
- (11) Check that incompatible and reactive wastes are segregated to prevent adverse reaction in the event of a spill or leak.
- (12) Check proper aisle space for container inspection and unobstructed access in the event of emergencies.
- (13) Check that communication equipment for emergency instruction and summoning emergency assistance is operable.
- (14) Check that spill control materials are available.
- (15) Check operability of safety shower and eyewash, if applicable (for portable eyewashes and showers that cannot be tested without discharging all of the contents, the operator shall ensure that the equipment is charged and the seal has not been broken).
- (16) Check that the contingency plan is posted and current and that it has been provided to fire, occupational health, and security organizations.
- (17) Record the number of hazardous waste containers at the site.
- (18) Inspect facility containment for cracks or damage, signs of leakage, standing water, or debris.

- (19) Inspect facility grounding points and drum grounding connections.
- (20) Organizations and contractors shall maintain the following records (hard copy or electronic providing they are readily available for inspection) for all Central Accumulation Area hazardous waste storage areas:
 - (a) Central Accumulation Area weekly inspection records are maintained in the WMS waste site module. WMS is the official record for the inspection.

13.10.4 Training records maintained for current employees until closure of facility. Training records maintained on former employees for three years from date last worked. The training records shall include:

- a. Job titles and names of employees filling each job.
- b. Description for each job title that includes hazardous waste management duties.
- c. Description and dates of initial and refresher training.

13.11 Satellite Accumulation Areas Hazardous Waste Storage

13.11.1 Training

13.11.1.1 Personnel with waste management responsibilities at a SAA shall complete initial classroom, on-the-job training and site-specific training. Some of the items to be covered in the site-specific annual training include the following:

- a. Know they have generated a hazardous waste – waste determination.
- b. Know the waste must be managed IAW the RCRA regulations – ensure proper handling.
- c. Be able to understand and implement the site-specific contingency plan – [40 CFR Part 262 Subpart M](#) applies to SAA's.
- d. Refresher training shall be completed within 13 months of the last date of training.
- e. All hazardous wastes are, by definition, hazardous materials, and employees whose actions directly affect the safe transportation of hazardous materials must be trained IAW [49 CFR 172, Subpart H](#), Training. Specific actions include filling, marking, and labeling of hazardous waste containers.

13.11.2 Contingency Plans

a. Hazardous waste storage areas shall have a posted contingency plan that meets the requirements of [40 CFR 262](#) and describes actions to be taken by facility personnel in response to evacuations, fires, explosions, or releases of hazardous wastes. Contingency plans shall include the following:

- (1) References to [KNPD 8710.1](#), [KNPR 8715.2](#), and [KDP-KSC-P-3008](#).
- (2) A method of revision tracking shall be use for contingency plans.

- (3) Appropriate emergency phone numbers.
- (4) The name and phone number of a primary and alternate site contact who are personally familiar with stored wastes and their characteristics.
- (5) All emergency equipment (fire control equipment, spill control equipment, communication and alarm systems, and decontamination equipment) including a description of each item's capabilities.
- (6) Emergency equipment shall be reviewed by KSC Protective Services whenever the facility changes in its design, construction, operation, maintenance, or other circumstance in a way that materially increases the potential for fires, explosions, or releases of hazardous waste. Any associated changes to the list of emergency equipment or changes to the list of site contacts shall be posted at the site.
- (7) An evacuation plan describing signals for area personnel to begin evacuation, evacuation routes, alternative evacuation routes, and marshaling areas. Where applicable, excerpts from emergency action plans developed under [KNPR 8715.3](#) will be used for this purpose.

13.11.3 SAA Container Requirements

- a. SAA Containers must be under the control of the worker generating the hazardous waste, be within visual sight of the worker, and be located no more than 50 feet from the process generating the waste. In laboratories, SAA can be located in or under the vent hoods.
- b. No more than 1 kilogram (kg) or 1 quart of an acutely hazardous waste stream shall be stored at an SAA.
- c. No more than 55 gallons of a non-acutely hazardous waste stream shall be stored at an SAA.
- d. Containers from different waste generating processes may be stored at the same SAA provided each waste stream does not exceed SAA storage limits for that waste (55 gallons for non-acutely hazardous waste or no more than 1 kg or 1 quart of an acutely hazardous waste).
- e. Waste generators accumulating hazardous wastes shall comply with the packaging requirements identified in the TRP for that waste stream.

13.11.4 SAA Hazardous Waste Removal

- a. If the accumulation volume limit (55 gallons for a non-acutely hazardous waste or 1 quart for an acutely hazardous waste) of a waste stream is reached at an SAA, the organization or contractor shall:
 - (1) Transfer the container to a Central Accumulation Area hazardous waste storage area within 3 consecutive calendar days.
 - (2) Coordinate pick up from the KSC WMO within 3 consecutive calendar days.

- a. If the accumulation volume limit has been reached, the organization or contractor shall use the date when the accumulation volume limit was reached as the ASD.
- b. If the accumulation volume limit has not been reached, but there is a need to dispose of the waste, organizations and contractors can transfer the waste containers at any time to a Central Accumulation Area hazardous waste storage area or request pickup by the KSC WMO.
- c. If the accumulation volume limit has not been reached, the organization or contractor shall use the date the container was removed from the SAA as the ASD.

13.12 Controlled Waste Management

13.12.1 Controlled wastes include, but are not limited to:

- a. Contaminated soils or debris
- b. Non-hazardous industrial wastewaters
- c. Non-hazardous used oil and oil filters
- d. Other non-hazardous waste where the release of the waste to the environment (either on KSC or off-Center) could result in an exposure, risk, liability, or cleanup

13.12.2 Organizations and contractors shall:

- a. Properly containerize, store, manage, and dispose of all controlled wastes through the KSC WMO.
 - b. Submit PWQs for potential controlled wastes to the KSC WMO for evaluation.
 - c. Use BMP when storing and managing controlled waste to ensure timely disposal, prevent improper disposal, and minimize releases to the environment.
 - d. Abstain from filling waste containers to 100 percent capacity in order to allow for adequate headspace for expansion to prevent seepage or container bulging.
 - e. Comply with TRP requirements regarding container filling maximums for safe transportation and easy handling.
 - f. Ensure empty containers are picked up for recycling by submitting a WSR to the KSC WMO. Unless purged of all hazardous materials residue, containers must retain all previous markings (including waste labels) to identify previous contents and associated hazards.
- (1) Containers must be provided for pickup fitted with the manufacturer's original closures. Waste Management will secure the closures as called out in the manufacturer's instructions prior to offering for transportation.
 - (2) Visual inspections will be performed for holes, gaps, or open spaces that may allow contents to escape.

13.13 Universal Waste

13.13.1 UW regulations were established by the EPA and the FDEP to ease the requirements for managing hazardous wastes that can be recycled. Items meeting the definition of UW can be collected and managed under requirements found in [40 CFR 273](#), [FAC 62-730](#), and [FAC 62-737](#).

13.13.2 The FDEP has adopted the [40 CFR 273](#) provisions of the UW rule under [FAC 62-730.185](#). EPA has authorized the state of Florida to develop guidance and requirements for additional waste streams that may be incorporated to the existing UW management handling standards.

13.13.3 Florida UW currently includes most batteries which exhibit a characteristic of hazardous waste, pesticides that are recalled or collected under a pesticide waste collection program, mercury-containing thermostats and devices such as manometers and switches, mercury-containing lamps such as fluorescent lamps, and pharmaceuticals. Pharmaceutical waste management requirements are specifically addressed in [Section 13.19](#) of this KNPR.

13.13.4 UW sites must be identified in the waste site module of WMS as a controlled waste site.

13.13.5 UW generators are called handlers and shall:

- a. Identify UW using the PWQ and TRP process and request pickup and disposal of UW as a controlled waste by the KSC WMO.
- b. Manage UW in a way that prevents releases to the environment. Non-leaking containers in good condition must be used if the UW is damaged or leaking. Containers must be kept closed except when necessary to add or remove UW.
- c. Use [KSC Form LMUW05](#) or [KSC Form LMUWT06](#) to mark UW accumulation containers IAW PWQ and TRP instructions, and may not accumulate UW for more than six months. This accumulation time limit allows the KSC WMO to consolidate and arrange for a recycling contractor to pick up the materials in conformance with UW storage restrictions.
- d. Mark the ASD (the date when the first item was placed into the container) on the UW label.
- e. Ensure that wastes created from the cleanup of spilled or leaked UW items be managed under the Waste Evaluation and Sampling process in [Section 13.6](#) of this KNPR. Therefore, the handler shall:
 - (1) Respond appropriately to releases.
 - (2) Determine if the residues resulting from releases are hazardous waste.
 - (3) Manage any hazardous waste cleanup under the full hazardous waste regulations as instructed in the TRP. Any release not cleaned up constitutes illegal disposal of hazardous waste and may lead to RCRA enforcement actions.

(4) Comply with the pollution incident notification requirements according to [Chapter 4](#) of this KNPR.

f. Complete training to ensure they are familiar with proper waste handling and emergency procedures and retain records for inspection.

g. Aerosol Waste Requirements

(1) All empty, spent, broken, unusable, or unwanted aerosol cans are considered “waste aerosol cans” and must be properly collected, stored, labeled, and disposed of through the KSC WMO.

(2) The KSC WMO crushes and recycles empty and defective aerosol cans generated at KSC as part of the EPA UW Rule.

(3) Waste aerosol cans must undergo the same waste characterization and evaluation process identified in [Section 13.6](#) of this KNPR.

(4) Generators shall store, label, and manage waste aerosol cans according to TRP instructions and the requirements in [Section 13.6](#) of this KNPR.

(5) All waste aerosol can accumulation containers must be legibly labeled and marked with the words “Waste Aerosol Cans Only” IAW the TRP. [KSC28-1019](#) or [KSC28-1020](#) are available to generators to help meet this requirement.

(6) Waste aerosol cans can be stored in three locations: (1) Central Accumulation Area, (2) SAA, or (3) Controlled Waste Area. A self-closing step may be used when contents are taken to a larger container or Drop Your Chemicals Off Here (DYCOH).

b. Flammable Storage Cabinet Requirements for Waste Aerosol Cans

(1) In areas where the waste aerosol can generation rate is low, a flammable storage cabinet may be used to store waste aerosol cans.

(2) Waste aerosol cans shall be stored in a labeled tote, labeled container, or on a labeled shelf in an approved flammable storage cabinet and segregated from other materials.

(3) Containers, totes, or shelves shall be marked as described in TRP (i.e. UW label, and “Waste Aerosol Cans Only” label)

(4) Transfer small quantities of waste aerosol cans to the DYCOH location (Building K7-0115) during designated days and times.

13.14 Waste Pickup

13.14.1 Organizations and contractors shall submit a waste pick up support request through WMS for pickup of hazardous and controlled waste from their facilities via the WMS.

13.14.2 The KSC WMO shall pick up hazardous and controlled waste from organizations and contractors.

13.14.3 The KSC WMO shall coordinate a pickup date and time with the organization or contractor, prepare the internal KSC waste manifest, and bring the internal KSC waste manifest to the pickup appointment.

13.14.4 The KSC WMO shall verify that the waste to be picked up meets all TRP packaging and labeling requirements.

13.14.5 The waste generating organization or contractor shall review the internal KSC waste manifest, verify the waste to be picked up is correctly identified on the manifest, and sign the internal KSC waste manifest as the generator.

13.14.6 The KSC WMO shall arrange for a vendor to pick up and transport the waste directly off-Center, or pick up and transport the waste to the TSDF, CCSFS Trident pretreatment plant, or other appropriate storage location.

13.15 Hazardous Waste Storage Tanks

13.15.1 Organizations and contractors who operate hazardous waste storage tank systems shall comply with the regulations in [40 CFR 265, Subpart J](#).

13.15.2 Hazardous waste accumulated in tanks shall be transferred to a vendor tanker truck or appropriate containers by the KSC WMO for disposal.

13.15.3 Organizations and contractors shall notify the NASA EAB prior to any installations, repairs, or modifications to hazardous waste tank systems.

13.15.4 Organizations and contractors shall perform leak tests on secondary containment repairs or modifications and attest to the integrity of the secondary containment.

13.15.5 Organizations and contractors storing hazardous waste in a new, repaired, or modified tank system shall obtain a written certification by a qualified, registered PE prior to placing the system into service. The assessment must attest to the tank and secondary containment structural integrity and acceptability for storing or treating hazardous waste.

13.15.6 Tanks accumulating hazardous wastes shall be equipped with a secondary containment system meeting the requirements in 40 CFR 265.193, Containment and Detection of Releases.

13.15.7 Organizations and contractors shall inspect hazardous waste storage tanks at least once each operating day according to the requirements in [40 CFR 265.195](#).

13.15.8 The following controls shall be used to minimize the release of volatile organic emissions according to 40 CFR 265, Subpart CC, for those waste streams containing greater than 500 parts per million (ppm) Volatile Organic Constituents. These controls meet requirements for level one tank controls as found in Subpart CC:

- a. Tank must be equipped with a fixed roof tank (not a floating roof).
- b. Each opening in the fixed roof must be equipped with a closure device or vented by a closed vent system to a control device.

- c. A pressure-vacuum relief valve may be used to maintain internal pressure within tank specifications and to avoid an unsafe condition. The valve may be vented to the atmosphere but must remain in the closed position when not venting.
- d. The maximum organic vapor pressure must be determined for the hazardous waste being accumulated to ensure that the pressure does not exceed the limits specified for tank control level one.
- e. Tank defect repairs subject to [40 CFR 265, Subpart CC](#) must be started within 5 days of the discovery of the defect and completed within 45 days of discovery.
- f. Hazardous waste transfers from one tank to another tank will be performed in a closed system. However, transfer from a tank to a container of 119 gallons or less need not be performed in a closed system.

13.16 Used Oil

Any lubricant refined from crude oil (or synthetic oil) that has been "used," and as a result of such use is contaminated by physical or chemical impurities, is classified as used oil. Used oil is managed according to regulations established in [40 CFR 279](#) and [FAC 62-710](#). The following waste generator standards apply to the management of used oil:

- a. Used oil containers, tanks, and associated piping shall be marked "Used Oil."
- b. Used oil containers, tanks, and associated piping shall be in good condition with no severe rusting, structural defects, deterioration, or leaks.
- c. Containers storing used oil shall be kept in secondary containment of sufficient size to contain the entire capacity of the largest single container plus sufficient freeboard to contain precipitation, where necessary. Reference the [KSC-PLN-1919](#), Section 4.3, for specific instructions on used oil container management and secondary containment requirements.
- d. Containers storing used oil shall be compatible with their contents.
- e. Aboveground used oil storage tanks of greater than 550 gallons and underground used oil storage tanks of greater than 110 gallons shall be registered with the FDEP.
- f. Used oil waste generators shall refer to [Chapter 17](#) of this KNPR for used oil tank registration requirements.
- g. If a used oil spill occurs, the waste generator shall immediately call 911 and report the release IAW the requirements in [Chapter 4](#) of this KNPR. The generator may attempt to stop the release, contain the released oil, and clean up the spill only if these actions do not pose a health and safety risk to the individual.

13.17 Used Oil Filters

Used oil filters are collected and managed as controlled waste before recycling according to regulations established in [FAC 62-710.850](#) and are to be managed as follows:

- a. Only non-terne plated filters will be managed according to these guidelines. Terne plated filters contain a lead and tin alloy that may require management as a hazardous waste.
- b. Used oil filters will be hot-drained of residual oil. The oil must be collected and managed as a controlled waste.
- c. Containers storing used oil filters will be sealed or otherwise protected from the weather and stored on an oil-impermeable surface such as polyethylene sheeting, rigid plastic secondary containment, or epoxy-coated concrete.
- d. Containers will be labeled "Used Oil Filters."

13.18 Petroleum Contact Water

13.18.1 PCW is wastewater containing a recoverable petroleum product that is not otherwise managed under the used oil regulations. PCW is managed according to regulations established in [FAC 62-740.030](#). Aboveground PCW storage tanks of greater than 550 gallons and underground PCW storage tanks of greater than 110 gallons shall be registered with the FDEP.

13.18.2 In addition to requirements found in the TRP, organizations and contractors shall comply with the following PCW standards:

- a. Label or mark the container or tank with the words "Petroleum Contact Water."
- b. Mark the PCW storage container or tank with the date the PCW accumulation first begins.
- c. Keep the container or tank closed at all times and stored in a safe manner.
- d. Inspect the tank or container weekly for leaks or deterioration and maintain the associated records for three years.
- e. Store PCW for no more than 180 days and document compliance by maintaining inventory records, annotating the ASD on [KSC Form 28-1088](#), and keeping records for at least three years.

13.19 Universal Pharmaceutical Waste

In April 2007, FDEP finalized the Universal Pharmaceutical Waste rule ([FAC 62-730.186](#)), which applies to pharmaceuticals classified as a hazardous waste under RCRA regulations. Due to the limited application on Center, complications with the State rule, and uncertainty over prospective EPA regulations, KSC chooses to continue managing hazardous waste pharmaceuticals under the full range of hazardous waste regulations found in this Chapter.

13.20 Asbestos Waste

13.20.1 Handling asbestos-containing material for disposal requires specialized training and adherence to specific procedures as directed by [29 CFR 1910.1001](#) and [29 CFR 1926.1101](#).

13.20.2 The removal of asbestos-containing insulation or pulverizing of asbestos-containing floor tiles can cause asbestos fibers to become airborne resulting in serious health risks. Before attempting to remove or handle any suspected asbestos-containing materials, the waste generator or waste generating organization shall contact KSC Environmental Health at 321-867-2400 for guidance.

13.20.3 The Asbestos Management Information System contains detailed facility asbestos survey data and can be accessed at [Asbestos and Hazardous Metals/PCB Survey Data](#) Web site. The waste generator shall refer to [Section 6.5](#) of this KNPR for the procedures and notification required for asbestos abatement and removal projects.

13.20.4 The following procedures shall be used for the containerization and management of ACWM from miscellaneous sources:

- a. Friable ACWM shall be wetted and placed in leak-tight, double wrapping before placement in a container such as fiberboard cartons, bags, or roll offs.
- b. Non-friable ACWM, such as floor tiles, may be placed directly into a waste container such as fiberboard cartons, bags, or roll offs. Certain non-friable ACWMs can release airborne asbestos fibers if the material becomes brittle or is exposed to extreme situations such as demolition or mechanical pulverization. In these cases, non-friable ACWM shall be wetted and double wrapped before placement in containers.
- c. Non-friable ACWM may be disposed of in the KSC Landfill with prior approval. Refer to Chapter 14 of this KNPR for guidance.
- d. Personal Protective Equipment (PPE) and other equipment used in the handling and removal of asbestos shall also be managed as ACWM if not decontaminated.
- e. OSHA regulations require [KSC Form 16-522](#), Asbestos Hazard Sign on all containers.
- f. Waste containers storing asbestos-containing material shall be managed in a secure area, such as a Central Accumulation Area/90-day hazardous waste storage area, as a BMP.
- g. Asbestos waste shipment records shall be maintained by the waste generator for at least two years.

13.21 Orangeburg Material Requirements

13.21.1 Orangeburg material, which is a combination of coal tar and creosote, has been found in underground ductwork at KSC. The material was sampled and found to contain semi-volatile organic compounds in concentrations that may pose health concerns and that are regulated by Federal and state environmental agencies.

13.21.2 The primary hazard posed by this material is the debris that is created through cleaning or upgrading work in ducts containing it. This debris contaminates water in the manholes, creates worker safety concerns, and is subject to state and Federal regulations. Personnel shall minimize disturbance of this material to prevent any accumulation of debris in manholes or conduits.

13.21.3 All PMs whose work involves potential contact with Orangeburg ductwork material or debris shall ensure that appropriate PPE is identified and used. In general, PPE for this type of work includes chemical eye goggles, butyl rubber gloves, and full-body impermeable clothing such as Tyvek or similar material.

13.21.4 Proper field sanitation shall be available in the form of washing and sanitation facilities in case of contact with the material.

13.21.5 When working at any KSC site with Orangeburg material present, personnel shall:

a. Take action prior to disturbing the Orangeburg material to prevent any accumulation of solid debris at the worksite (e.g., ground cover for cleanout equipment, a capture mechanism in the manhole). Any solid material that is accumulated from this or any similar activities shall be containerized and disposed of as required by this KNPR.

b. Clean out visible solid debris that has accumulated in manholes or conduits known to contain Orangeburg material. Dewatering effluent that has come into contact with Orangeburg debris shall be containerized and disposed of as required by KSC waste management's PWQ and TRP instructions. A filter mechanism on the discharge line would help capture any debris associated with duct cleanout.

c. Any solid material accumulated during the cleanout shall be containerized and disposed of as called out in this KNPR.

d. A PM or construction inspector shall visually inspect and conclude that no solid Orangeburg debris is in the manhole before discharging dewatering effluent to grade. For work at sites where Orangeburg material has not been disturbed and there is no visible Orangeburg debris, dewatering effluent may be discharged to grade.

13.22 Paint and Coating Waste Management

13.22.1 Various paints and coatings are used across KSC for corrosion control, surface protection, safety, aesthetics, etc. Many different waste streams and waste materials are generated from paint and coating removal and application activities.

Chemicals present in paints, coatings, thinners, additives, blast media, stripping solvents, and cleaning solvents may require certain paint and coating-related waste streams to be managed as hazardous or controlled wastes. Materials that would not normally be considered a hazardous or controlled waste may become such when they come into contact with certain paints, coatings, thinners, additives, blast media, stripping solvents, and cleaning solvents.

13.22.2 Paint and coating-related waste materials including, but not limited to, those listed below may be a hazardous or controlled waste. These materials shall be evaluated to ensure proper management and disposal:

a. Unused or leftover paints, coatings, stains, thinners, additives (stabilizers, binders, dryers, thickeners, preservatives, etc.), stripping solvents, cleaning solvents, etc.

b. Spent cleaning solvents.

c. Paint and coating chips and dust.

- d. Spent blast media with paint and coating chips and dust.
- e. Paint and coating stripping wastes.
- f. Miscellaneous materials such as rags, brushes, rollers, stirring sticks, liners, PPE, masking, tape, and other waste materials that have contacted paints, coatings, solvents, thinners, etc.
- g. Sludge from paint thinner or cleaning solvent distillation.
- h. Spray booth filters.
- i. Aerosol and spray paint cans.

NOTE: Aerosol cans are to be managed according to the requirements in [Section 13.11](#) KNPR.

- j. Decontamination water and equipment wash water.

13.22.3 Prior to generating any paint and coating-related waste streams, the generator shall submit a PWQ to the KSC WMO for each waste stream.

13.22.4 The KSC WMO shall determine if a waste stream is a hazardous or controlled waste and issue a TRP. Waste sampling may also be required to determine if a waste stream is a hazardous or controlled waste.

13.22.5 Open air drying or evaporation of unused or leftover paints and coatings is prohibited at KSC, as these materials may also be considered hazardous and controlled waste.

13.22.6 Open air drying or evaporation of other paint and coating-related wastes may be a regulatory violation and is strictly prohibited at KSC unless approved by the NASA EAB. All hazardous and controlled wastes shall be stored in closed containers. Waste containers must be kept closed unless waste is being added to the container.

13.22.7 Empty paint, coating, thinner, cleaning solvent, and other product containers shall meet certain criteria before they can be considered “empty” and disposed of as regular trash or recycled. Improper management and disposal of spent product containers can lead to possible regulatory violations and improper hazardous and controlled waste disposal.

13.22.8 At KSC, a container is considered “empty” when:

- a. All contents have been removed using the practices commonly employed to remove materials from that type of container (pouring, pumping, scraping, etc.).

(1) For containers that held a material that can be readily poured, all material must be removed by any practicable means (including draining, pouring, pumping, or aspirating) before the container can be considered empty. A container is empty when there is no longer a continuous stream of material coming from the opening when the container is held in any orientation.

(2) For containers that previously held non-pourable material, no material shall remain in the container that can feasibly be removed by physical methods, including scraping and chipping, but not rinsing. This standard applies to materials that pour slowly or don't pour at all from the container, including, but not limited to, viscous materials, solids which have "caked up" inside the container, and non-pourable sludges.

(3) Any materials removed to empty a container must either be used for their intended purpose or managed as a waste material as described in this Chapter.

b. No more than one inch of material or no more than three percent by weight of the total capacity of the container remains in the container.

13.22.9 Containers that do not meet the "empty" criteria and definition described above cannot be disposed of as regular trash or recycled. Those containers and their contents may be considered a hazardous or controlled waste and shall be properly managed and disposed of according to the requirements of this Chapter.

13.22.10 Once a container meets the "empty" criteria and definition, residual material left inside the container shall be air dried or cured in the container prior to container disposal. After the residual materials are dried or cured, the container can be disposed of as regular trash or recycled.

13.22.11 Inorganic Zinc Paint Waste Management Requirements

a. Inorganic Zinc (IOZ) paints and coatings are used at various facilities across KSC for corrosion control. Due to the unique nature of this material, a separate waste management requirement has been developed to meet hazardous waste requirements and mitigate safety concerns.

b. When placed in a sealed container, IOZ paint can produce hydrogen gas and other gases from chemical reactions that occur during the curing process. The gas production builds pressure in the container and can cause the container to bulge or rupture, thus creating a safety hazard to personnel.

c. Due to its constituents, unused and leftover IOZ paints or coatings are a hazardous waste and shall be properly managed according to hazardous waste regulations. It is a regulatory violation to allow unused or leftover IOZ paint to open air dry at KSC.

d. Users of IOZ paint shall physically separate IOZ paint-related waste streams from other waste streams at the job site or shop.

e. Users of IOZ paint shall segregate and manage IOZ paint-related waste streams according to the three categories (and respective requirements) below.

f. Prior to generating waste, users of IOZ paint shall submit PWQs to the KSC WMO.

g. The KSC WMO shall issue a TRP that lists acceptable storage container types and provides specific marking and labeling instructions.

(1) Category 1: Leftover or Unusable IOZ Paint

(a) Leftover or unusable IOZ paint shall be stored in the original product containers supplied by the manufacturer with a loosely secured lid.

(b) The original product containers shall be placed into a larger closed drum or container that meets hazardous waste storage requirements and prevents any possible release to the environment. To avoid potential safety hazards, a 5-psi pressure relief vent must be installed on the larger closed drum or container.

(c) Original product containers of leftover or unusable IOZ paint are to be picked up daily by the KSC WMO. Waste generators are responsible for coordinating with and notifying the KSC WMO about IOZ painting operations, working days, and waste pickups.

(d) No cleaning solvents shall be placed into any leftover or unusable IOZ paint containers.

(2) Category 2: Spent Cleaning Solvents

(a) Spent cleaning solvents that have contacted IOZ paint shall be stored in appropriate containers according to TRP instructions. To avoid potential safety hazards, a 5-psi pressure relief vent must be installed on these spent cleaning solvent containers.

(b) Waste generators are responsible for requesting pickup from the KSC WMO when the container is full or work is completed.

(3) Category 3: Solids from IOZ Mixing and Painting Operations

(a) Solids include rags, brushes, rollers, liners, stirring sticks, PPE, masking paper or tape, or other waste solid materials that have contacted IOZ paint.

(b) Solids that have contacted IOZ paint shall be stored in appropriate containers according to TRP instructions. To avoid potential safety hazards, a 5-psi pressure relief vent must be installed on these solid containers.

(c) Spent original product containers, cans, and buckets shall be wiped empty of all residuals and disposed of IAW TRP instructions.

(d) Waste generators are responsible for requesting pickup from the KSC WMO when the container is full or work is completed.

a. Aerosol cans of IOZ primer and IOZ paint are exempt from the requirements of this section and shall be managed according to aerosol can requirements in [Section 13.11](#) of this KNPR.

b. Empty paint, coating, thinner, cleaning solvent, and other product containers generated from IOZ operations shall meet certain criteria before they can be considered "empty" and disposed of as regular trash or recycled. Improper management and disposal of spent product containers can lead to possible regulatory violations and improper hazardous and controlled waste disposal.

(1) All contents have been removed by using the practices commonly employed to remove materials from that type of container (pouring, pumping, scraping, etc.).

(2) Containers that held a material that can be readily poured must have all material removed by any practicable means (including draining, pouring, pumping, or aspirating) before the container can be considered empty. A container is empty when there is no longer a continuous stream of material coming from the opening with the container held in any orientation.

(3) Containers that previously held non-pourable material shall have no material remaining in the container that can feasibly be removed by physical methods, including scraping and chipping, but not rinsing. This standard applies to materials that pour slowly or don't pour at all from the container, including, but not limited to, viscous materials, solids which have "caked up" inside the container, and non-pourable sludges.

(4) Any materials removed to empty a container must either be used for their intended purpose or managed as a waste material as described in this Chapter.

c. Containers from IOZ operations that do not meet the "empty" criteria and definition described above cannot be disposed of as regular trash or recycled. Those containers and their contents may be considered a hazardous or controlled waste and shall be properly managed and disposed of according to the requirements of this Chapter.

d. Once a container from IOZ operations meets the "empty" criteria and definition, the container can be disposed of as regular trash or recycled.

13.23 Electronic Equipment Waste

13.23.1 Organizations and contractors shall dispose of intact, non-broken, unuseable electronic equipment (E-waste) items through the KSC Property Disposal Office for resale or recycling.

13.23.2 Certain E-waste items are considered a hazardous waste when broken or leaking; therefore, organizations and contractors shall consult with the NASA EAB or KSC WMO regarding the proper management and disposal of broken or leaking E-waste items.

13.23.3 The organization or contractor shall containerize the item, submit a PWQ, and dispose of the item through the KSC WMO.

13.24 Flex Hose Disposal

13.24.1 New and Unused Flex Hoses

a. Flex hoses in unopened manufacturer packages shall be considered new flex hoses.

b. Flex hoses that have been opened and have documentation showing they have never been used shall be considered unused flex hoses.

c. As a safety precaution, all other flex hoses shall be considered used flex hoses.

d. New and unused flex hoses are not subject to any environmental regulatory requirements for disposal.

e. The KSC Reutilization, Recycling, and Marketing Facility (RRMF) can accept new and unused flex hoses from organizations and contractors.

f. New flex hoses shall be transferred to the RRMF in the manufacturer's packaging for further disposition.

g. Flex hoses deemed used based on opened packaging and lack of documentation that they are unused shall be cut into 4-foot to 6-foot sections.

(1) Used flex hoses 4 feet and shorter shall be cut in half. Organizations and contractors without the capability to safely cut flex hoses can seek assistance from other organizations (such as the Base Operations and Support Services (BOSS)) for this task, if funding is provided.

h. A completed [KSC Form 7-49](#) must accompany the flex hoses upon delivery to the RRMF. The description should reflect either "new flex hose – resale" or "unused flex hose" shall be on the form to further aid in identifying the appropriate disposition.

13.20.2 Used Clean Gas Flex Hoses (used for inert or atmospheric gases such as air, oxygen, nitrogen, helium, argon, etc.)

a. Clean gas flex hoses are not subject to any environmental regulatory requirements for disposal.

b. The RRMF may accept clean gas flex hoses from organizations and contractors for recycling as scrap metal.

c. Organizations and contractors shall cut clean gas flex hoses into 4 foot to 6 foot sections. Organizations and contractors without the capability to safely cut flex hoses can seek assistance from other organizations (such as BOSS) for this task, if funding is provided.

d. A completed [KSC Form 7-49](#) must accompany the flex hoses upon delivery to the RRMF. The description "clean gas flex hose – scrap only" shall be on the form.

13.24.3 Used hydrocarbon flex hoses (used for liquid hydrocarbons such as hydraulic fluids, fuels, oils, solvents, etc.)

a. Used hydrocarbon flex hoses are not subject to any environmental waste disposal regulations provided the fluids have been adequately drained (no visible drips) from the flex hose. The drained fluids shall be containerized and properly disposed of as separate waste streams.

b. The RRMF may accept used hydrocarbon flex hoses from organizations and contractors for recycling as scrap metal.

c. Organizations and contractors shall adequately drain the flex hoses (no visible drips) and cut them into 4 foot to 6 foot sections before delivery to the RRMF. Organizations and contractors without the capability to safely cut flex hoses can seek assistance from other organizations for this task if funding is provided.

d. A completed [KSC Form 7-49](#) must accompany the flex hoses upon delivery to the RRMF. The description "hydrocarbon flex hose – scrap only" shall be on the form.

13.24.4 Used ammonia and hypergolic elastomeric flex hoses (used for ammonia, hypergolic fuels, hypergolic oxidizers, etc.)

- a. Elastomeric flex hoses have internal liners or soft goods that can absorb hazardous materials.
- b. Soft goods are synthetic materials (such as polyurethane, Teflon, plastics, etc.) bonded to the inside of the flex hose.
- c. Used ammonia and hypergolic elastomeric flex hoses are subject to hazardous waste disposal regulations and shall not be sold, recycled, or reused in another application.
- d. Used ammonia and hypergolic elastomeric flex hoses must be decontaminated and disposed of through the KSC WMO by the following process:
 - (1) Organizations and contractors shall submit a PWQ for the flex hose to the KSC WMO according to Chapter 13 of this KNPR. The KSC WMO will issue a TRP with waste packaging and labeling instructions.
 - (2) Organizations and contractors shall drain the flex hose of the hazardous material.
 - (3) Organizations and contractors shall flush the flex hose at least three times to remove residual hazardous material. A fresh set of flushing liquids, with a volume greater than 10 percent of the flex hose capacity, must be used for each flush. The three sets of flushing effluent must be containerized and properly disposed of as a separate waste stream.
 - (4) Organizations and contractors shall place [KSC Form 29-1096](#), [KSC Form 4-295](#), [KSC Form 4-296](#) on the flex hose to document that the field flush has been completed.
 - (5) After the three flushes, the flex hose must be flushed with neutralizer solution to remove the hazardous material. The flex hose will then be flushed with water until a neutral potential of hydrogen (pH) is obtained in the water rinsate. All neutralizer and water rinsates shall be containerized and properly disposed as separate waste streams.
 - (6) The flex hose shall be dried and placed in a sealed container or bag for at least 72 hours. The decontamination process is complete if the air concentration (determined by toxic vapor detector test) of the hazardous material in the sealed container or bag is below the acceptable decontamination limit (ADL) concentration listed below.

NOTE: If the hazardous material concentration exceeds the ADL concentration, the flex hose must be decontaminated again.
- e. After decontamination, organizations and contractors shall cut the flex hoses into 4 foot to 6 foot sections; containerize the flex hose sections according to TRP instructions, and dispose of the containers through the KSC WMO.

f. Organizations and contractors without the capability to safely decontaminate or cut flex hoses can seek assistance from other organizations (such as BOSS) for this task if funding is provided.

13.24.5 used ammonia and hypergolic convoluted flex hoses (used for ammonia, hypergolic fuels, hypergolic oxidizers, etc.)

a. Convoluted flex hoses typically do not have any internal liners or soft goods that can absorb hazardous materials. Soft goods are synthetic materials (such as polyurethane, Teflon, plastics, etc.) bonded to the inside of the flex hose.

b. Used ammonia and hypergolic convoluted flex hoses are subject to hazardous waste disposal regulations until they are properly decontaminated.

c. The RRMF may accept used ammonia and hypergolic convoluted flex hoses from organizations and contractors for recycling as scrap metal provided they are properly decontaminated by the following process:

(1) Drain the flex hose of the hazardous material.

(2) Flush the flex hose at least three times to remove residual hazardous material. A fresh set of flushing liquids, with a volume greater than 10 percent of the flex hose capacity, must be used for each flush. The three sets of flushing effluent must be containerized and properly disposed of as a separate waste stream.

(3) [KSC Form 29-1096](#), [KSC Form 4-295](#), and [KSC Form 4-296](#) shall be placed on the flex hose to document that the field flush has been completed.

(4) After the three flushes, the flex hose must be flushed with neutralizer solution to remove the hazardous material. The flex hose will then be flushed with water until a neutral potential of hydrogen (pH) is obtained in the water rinsate. All neutralizer and water rinsates shall be containerized and properly disposed of as separate waste streams.

(5) The flex hose shall be dried and placed in a sealed container or bag for at least 72 hours. The decontamination process is complete if the air concentration (determined by toxic vapor detector test) of the hazardous material in the sealed container or bag is below the ADL concentration listed below. If the hazardous material concentration exceeds the ADL concentration listed below, the flex hose must be decontaminated again.

(a) Hypergolic oxidizer ADL - 1.0 ppm

(b) Hypergolic fuel ADL - 0.1 ppm

(c) Ammonia ADL - 3.0 ppm

d. All non-metal gaskets, seals, or caps must be removed from the flex hose and properly disposed of as a separate waste stream. These items cannot be transferred to the RRMF.

- e. After decontamination, organizations and contractors shall cut the flex hoses into 4-foot to 6-foot sections and transfer them to the RRMF for recycling as scrap metal. A completed [KSC Form 7-49](#) must accompany the flex hoses upon delivery to the RRMF. The description “ammonia flex hoses (decontaminated) – scrap only” or “hypergolic flex hoses (decontaminated) – scrap only” must be on the form.
- f. Organizations and contractors without the capability to safely decontaminate or cut flex hoses can seek assistance from other organizations for this task if funding is provided.

13.24.6 Flex Hose Hardware

- a. Flex hose hardware includes metal fittings, B-nuts, caps, unions, elbows, etc.
- b. In general, flex hose hardware shall be processed, decontaminated, and disposed of in a manner similar to the related flex hose requirements described above. For example, hardware with elastomeric components used for ammonia or hypergol must be disposed of in the same manner as ammonia and hypergol contaminated elastomeric flex hoses.
- c. For hardware that can be accepted at the RRMF, a completed [KSC Form 7-49](#) must accompany the hardware upon delivery to the RRMF. The following appropriate description shall be on the form:
 - (1) New flex hose hardware
 - (2) Unused flex hose hardware – scrap only
 - (3) Clean gas flex hose hardware – scrap only
 - (4) Hydrocarbon flex hose hardware – scrap only
 - (5) Ammonia flex hose hardware (decontaminated) – scrap only
 - (6) Hypergol flex hose hardware (decontaminated) – scrap only

13.25 Ordnance Waste Management

13.25.1 Applicability

- a. The ordnance waste management requirements outlined in this section apply to NASA organizations, programs, and contractors and do not apply to commercial entities or tenants performing non-NASA operations and activities at KSC.
- b. Commercial tenants performing non-NASA operations and activities shall properly manage and dispose of all ordnance waste according to Federal, Florida, and local environmental laws, statutes, regulations, and ordinances.
- c. All ordnance waste generated by commercial tenants performing non-NASA activities must be properly containerized, stored, labeled, manifested, shipped, and disposed of under the commercial entity’s own EPA hazardous waste identification number.

13.25.2 Background and Regulatory Requirements

- a. For this section, the term “ordnance items” refers to unexpended ordnance devices or explosive raw materials that have not been declared a waste or defined as a waste under environmental regulations.
- b. For this section, the term “ordnance waste” refers to excess unexpended ordnance devices, expended ordnance devices that contain (or may contain) residues of hazardous materials or regulated substances, damaged ordnance devices, or excess explosive raw materials used to make an ordnance device that have been declared a waste or defined as a waste under environmental regulations.
- c. Ordnance waste may be classified as either a hazardous waste or a controlled waste depending on the constituents and the DOT hazard classification.
 - (1) Hazardous wastes are flammable, toxic, corrosive, or reactive wastes defined by RCRA regulations.
 - (2) Controlled wastes are either non-hazardous wastes regulated by non-RCRA regulations or are non-hazardous wastes that may pose an environmental cleanup liability to NASA if released to the environment.
- d. NASA does not currently operate an ordnance disposal facility at KSC.
- e. The Space Launch Delta (SLD) 45 operates an Explosive Ordnance Disposal (EOD) Range at CCSFS under a RCRA hazardous waste treatment and disposal permit issued by the FDEP.
- f. The CCSFS EOD Range consists of an open detonation area and a thermal treatment area.
- g. The current CCSFS EOD Range RCRA hazardous waste treatment and disposal permit limits the quantity of ordnance that can be treated for each disposal event to 100 pounds net explosive weight (NEW).
- h. The CCSFS EOD Range Safety Plan limits the types and sizes (such as NEW) of ordnance that can be disposed of.
- i. The SLD 45 EOD personnel dispose of certain ordnance waste for NASA at the CCSFS EOD Range under KCA-1285 (also known as Joint Operating Procedure 15E-2-51).
- j. NASA organizations and contractors must supply all ancillary materials (such as C-4 explosives, detonation cord, blasting caps, wood, fuel, etc.) required by AF EOD personnel to dispose of NASA ordnance waste at the CCSFS EOD Range.
- k. The Launch Operations Support Contract (LOSC) contractor currently operates the KSC Ordnance Storage Facility (OSF) and is available to transport ordnance and ordnance waste for NASA organizations and contractors.

l. Organizations and contractors shall properly identify, manage, and dispose of all ordnance waste according to the applicable Federal, state, and local regulations and the requirements of this KNPR.

m. If approved by the SLD 45, organizations and contractors shall dispose of ordnance waste below 100 pounds NEW at the CCSFS EOD Range. Treatment and disposal at the CCSFS EOD Range reduces ordnance waste disposal costs and increases public safety by preventing ordnance waste items from being shipped over public highways.

n. Organizations and contractors shall dispose of ordnance waste greater than 100 pounds NEW and ordnance waste not approved for disposal at the CCSFS EOD Range at a permitted off-site commercial disposal facility.

13.25.3 Ordnance Waste Declaration

a. Organizations and contractors shall determine when their unexpended ordnance items and expended ordnance items are a waste.

b. Ordnance items that have been used for their intended purpose or determined to be excess shall be declared an ordnance waste.

c. Ordnance items that have been used for their intended purpose but are being stored for, or actively undergoing, post-flight testing, evaluation, or analysis shall not be declared an ordnance waste until the post-flight testing, evaluation, or analysis is complete.

d. Ordnance items kept for a known or potential future use shall not be declared an ordnance waste until the items are determined to be excess by the owning organization or program.

e. Leaking, damaged, unstable, or abandoned ordnance items shall be immediately declared an ordnance waste.

f. Once an ordnance item has been declared an ordnance waste by the organization or contractor that declaration is irrevocable and the organization or contractor shall immediately submit paperwork to the KSC WMO to characterize the waste, properly store and label the waste, and initiate the disposal process according to the requirements outlined below.

g. Ordnance Waste Evaluation and Characterization

(1) Organizations and contractors shall complete a PWQ for ordnance waste streams that have not been recently (within the past 12 months) evaluated and submit the PWQ to the KSC WMO IAW the requirements outlined in [Section 13.6](#) of this KNPR.

(2) The KSC WMO shall prepare the required Land Disposal Restriction (LDR) Notification and Certification form and submit it to the NASA EAB for approval.

(a) For ordnance waste disposed at the CCSFS EOD Range, the NASA EAB shall approve and sign the LDR form and provide it to the SLD 45.

(b) For ordnance waste disposed of at an off-site commercial disposal facility, the KSC WMO shall sign the approved LDR form and submit a copy to the disposal facility and NASA EAB.

13.25.5 Ordnance Waste Storage and Labeling Requirements

a. Organizations and contractors shall store ordnance waste at the KSC OSF unless an alternative ordnance waste storage location has been approved by Safety and Mission Assurance, KSC Protective Services, and NASA EAB.

b. Organizations and contractors shall immediately notify the NASA EAB whenever an ordnance waste storage location is established, activated, relocated, deactivated, or disestablished.

c. Organizations and contractors shall immediately notify the NASA EAB when ordnance waste is generated, declared, or placed into an ordnance waste storage location so NASA EAB can assist in coordinating disposal.

d. Organizations and contractors shall store ordnance waste IAW the requirements outlined in [NASA-STD 8719.12](#), [KDP-KSC-P-2236](#), and [40 CFR 265-1201](#).

e. Organizations and contractors shall store waste ordnance IAW the hazardous and controlled waste storage requirements outlined in [Section 13.24](#) of this KNPR. Key requirements and exceptions are as follows:

(1) Because ordnance items with a DOT Hazard Class of 1.1, 1.2, or 1.3 are known reactive RCRA hazardous waste, organizations and contractors shall immediately label and store the ordnance waste as a hazardous waste before the TRP has been issued by the KSC WMO. This is an exception to the HWDIP labeling requirements outlined in this chapter of this KNPR.

(2) For ordnance items with a DOT Hazard Class of 1.4, 1.5, or 1.6, or for ordnance items with an unknown hazard class, organizations and contractors shall label the waste with [KSC Form 29-759](#) and store the waste as if it were a hazardous waste until the waste characterization process is complete (KSC WMO has issued the TRP).

(3) After receipt of the TRP from the KSC WMO, organizations and contractors shall containerize and label hazardous and controlled ordnance waste according to TRP instructions.

f. Organizations and contractors shall obtain bar codes from the KSC WMO and place bar codes on ordnance waste containers for tracking throughout the disposal process.

g. Hazardous waste ordnance shall be stored in either a Central Accumulation Area/90-day hazardous waste storage area or SAA IAW the requirements outlined in Sections [13.10](#) or [13.11](#) of this KNPR.

(1) Organizations and contractors shall actively manage all ordnance waste in storage, track ordnance waste storage times, and coordinate waste pickups with enough advance notice to complete offsite shipment or onsite disposal within regulatory time limits.

(2) If unforeseen circumstances (such as weather, safety concerns, range operations, unavailability of AF EOD technicians, etc.) prevent the local disposal or offsite shipment of ordnance waste by the Central Accumulation Area/90-day storage limit, the organization or contractor shall immediately contact the NASA EAB who will request an extension from the FDEP.

13.25.6. Additional Requirements for Ordnance Waste Storage at the KSC OSF:

- a. Organizations and contractors shall coordinate the establishment, activation, relocation, deactivation, or disestablishment of ordnance waste storage locations with the OSF operator.
- b. Organizations and contractors shall store ordnance waste in the appropriate magazine based on the DOT Hazard Class.
- c. Organizations and contractors shall coordinate the delivery, removal, and ongoing storage of ordnance waste with the OSF operator.
- d. The OSF operator shall approve access to the OSF and escort personnel during visits to ordnance storage magazines.
- e. The OSF operator shall maintain an inventory of all ordnance waste placed into storage at the OSF.
- f. Organizations and contractors shall be responsible for providing adequate funding to the LOSC contractor to support their ordnance waste storage activities and escorted visits.
- g. Additional Requirements for Ordnance Waste Storage at Facilities other than the KSC OSF.

(1) Organizations and contractors shall obtain approval from Safety and Mission Assurance, KSC Protective Services, and NASA EAB to store ordnance waste at locations other than the KSC OSF.

(2) Organizations and contractors shall store ordnance waste IAW the requirements outlined in [NASA-STD 8719.12](#).

(3) The combined quantity of ordnance material and ordnance waste stored at each location shall not exceed the approved sited amount for that location.

13.25.7 Ordnance Waste Transportation

a. When transporting ordnance waste from one location to another on KSC or CCSFS property, organizations and contractors shall comply with transportation requirements outlined in [NASA-STD 8719.12](#) and [KDP-KSC-P-2236](#).

b. When transporting ordnance waste over public highway for disposal at an offsite commercial disposal facility, organizations and contractors shall:

(1) Ensure that the shipment complies with all State of Florida and DOT regulations including transportation approvals, transporter licenses, vehicle types, placarding, and manifesting requirements.

- (2) Have the KSC WMO prepare and sign the hazardous waste or non-hazardous waste shipping manifest.

13.25.8 CCSFS EOD Range Ordnance Waste Disposal Requirements

- a. If approved by the SLD 45, organizations and contractors shall dispose of small ordnance items (up to 100 pounds NEW) at the CCSFS EOD Range.
- b. Only certified AF EOD technicians shall perform treatment and disposal of ordnance items at the CCSFS EOD Range.
- c. Organizations and contractors shall prepare an ordnance disposal support request letter addressed to the SLD 45 EOD Office with the following information and submit it to the NASA EAB:
 - (1) Ordnance information
 - (2) United Nations number
 - (3) Nomenclature
 - (4) Proper shipping name
 - (5) Number of items
 - (6) DOT hazardous material classification and division
 - (7) NEW (each item)
 - (8) Total NEW (sum of all items of the same type)
 - (9) Department of Defense (DOD) Identification Code (if applicable)
 - (10) Condition and stability of the ordnance waste
 - (11) Reason and justification for disposal at the CCSFS EOD Range
 - (12) Applicable mission support agreement number (i.e., KCA-1285/Joint Operating Procedure 15E-3-15)
 - (13) LOSC Job Order Number (if LOSC is providing ordnance transportation support)
- d. The NASA EAB shall coordinate the disposal of NASA ordnance waste with the SLD 45 EOD Office, [SLD 45 Environmental Office](#), and [AF Environmental Support Contract \(ESC\) Office](#).
- e. The NASA EAB shall submit the ordnance disposal support request letter, PWQ, TRP, LDR form, design information, and any other documentation required to facilitate safe disposal to the SLD 45 EOD Office, [SLD 45 Environmental Office](#), and [AF ESC Office](#) for review.

f. If approved by the SLD 45, the NASA EAB shall communicate the scheduled disposal operation date, required ancillary materials (such as C-4 explosives, detonation cord, blasting caps, wood, fuel, etc.), and disposal method (open detonation or thermal treatment) to the organization or contractor.

g. The responsible NASA program or organization shall provide funding for all ancillary materials (such as C-4 explosives, detonation cord, blasting caps, wood, fuel, etc.) needed by AF EOD personnel to perform the disposal operation.

(1) All ancillary ordnance items required to support the disposal operation shall be National Stock Number listed ordnance items procured from a DOD Ordnance Logistics Depot (AF EOD requirement).

(2) The NASA EAB shall assist organizations and contractors with purchasing ordnance items from a DOD Ordnance Logistics Depot.

13.25.9 Open Detonation Disposal Requirements

a. The responsible NASA program or organization shall provide funding for the transportation of the ordnance waste and ancillary materials to the open detonation area at the CCSFS EOD Range on the day of the disposal operation.

b. After the disposal operation is complete, the SLD 45 EOD personnel will dispose of any scrap metal generated from the disposal operation and provide an ordnance disposal confirmation letter to the NASA EAB.

c. The NASA EAB shall distribute the ordnance disposal confirmation letter to the contractor or organization responsible for the waste, the KSC WMO, and the [SLD 45 Environmental Office](#).

d. The KSC WMO shall maintain all ordnance disposal confirmation letters in order to complete hazardous waste disposal reports submitted to the FDEP.

13.25.10 Thermal Treatment Disposal Requirements

a. At least seven calendar days prior to the scheduled disposal operation date, the NASA EAB shall submit [KSC Form 28-809](#) to KSC WMO to support clean-out of residual waste from the thermal treatment unit after completion of the operation.

b. The responsible NASA program or organization shall provide funding for the transportation of the ordnance waste and ancillary materials to the thermal treatment area at the CCSFS EOD Range on the day of the disposal operation.

c. After the disposal operation is complete and SLD 45 EOD personnel have declared the thermal treatment unit safe, the KSC WMO shall clean out the thermal treatment unit and obtain a completed [KSC Form 7-49](#) from the SLD 45 EOD personnel stating that the scrap metal is ordnance free.

d. The KSC WMO shall transport all scrap metal from the thermal treatment unit to the RRMF for recycling and provide a copy of the completed [KSC Form 7-49](#) to the RRMF personnel.

- (1) RRMF personnel shall provide a letter of acceptance (that includes the weight of the scrap metal) to the KSC WMO.
 - (2) The KSC WMO shall provide a copy of the completed [KSC Form 7-49](#) and RRMF letter of acceptance to the NASA EAB.
 - (3) The NASA EAB shall provide a copy of the completed [KSC Form 7-49](#) and RRMF letter of acceptance to the SLD 45 Environmental Office.
- e. The KSC WMO shall place all other residuals (such as ash) from the thermal treatment unit into waste drums and transport the drums to the Central Accumulation Area/90-day site at the KSC waste storage complex. Treatment residue (ash) is managed through HWDIP process and cannot be stored in permitted facility prior to waste characterization through PWQ TRP process.
 - f. The NASA EAB shall arrange to have waste characterization samples collected (if required), submit a PWQ, obtain a TRP, label the drum according to TRP instructions, and coordinate offsite disposal of the residual waste (such as ash) through the KSC WMO IAW the requirements outlined in Chapter 13 of this KNPR.
 - g. After the disposal operation is complete, the SLD 45 EOD personnel will provide an ordnance disposal confirmation letter to the NASA EAB.
 - h. The NASA EAB shall distribute the ordnance disposal confirmation letter to the organization or contractor responsible for the waste, the KSC WMO, and the SLD 45 Environmental Office.
 - i. The KSC WMO shall maintain all ordnance disposal confirmation letters in order to complete hazardous waste disposal reports submitted to the FDEP.
 - j. The responsible NASA program or organization shall provide funding for thermal treatment unit clean-out, scrap metal transportation, residual waste sampling, residual waste transportation, and residual waste disposal.
 - k. In the event that a disposal operation is cancelled due to adverse weather conditions, SLD 45 EOD personnel unavailability, or other range restrictions, the organization or contractor shall coordinate and provide funding to transport the ordnance waste and ancillary materials back to their storage locations until a new disposal operation date is scheduled.

13.25.11 Offsite Ordnance Waste Disposal Requirements

- a. When disposing of ordnance waste at an offsite commercial disposal facility, organizations and contractors shall coordinate the disposal through the NASA EAB and KSC WMO.
- b. The responsible NASA program or organization shall obtain an ordnance waste disposal contract through a NASA procurement office or provide a funded support request to the KSC WMO to complete the disposal.
- c. Organizations and contractors shall ensure that the facility is adequately permitted to receive and dispose of the ordnance waste.

d. Organizations and contractors shall provide waste information and assist the NASA EAB and KSC WMO in obtaining DOT approvals required to transport the ordnance waste over public highways.

e. Regardless of whether the ordnance disposal is contracted by a NASA procurement office or by the KSC WMO, the KSC WMO shall:

- (1) Ensure that the commercial disposal facility is properly permitted and the disposal method meets waste disposal regulations.
- (2) Prepare and sign the shipping manifest or hazardous waste manifest.
- (3) Ensure the shipment mode meets all DOT requirements.
- (4) Track the disposal and obtain a completed manifest or certificate of disposal (or equivalent) from the commercial disposal facility.
- (5) Maintain manifests and certificates of disposal in order to complete hazardous waste disposal reports for submittal to the FDEP.

f. The responsible NASA program or organization shall be responsible for all ordnance waste transportation costs, ordnance waste disposal costs, and labor costs incurred by the KSC WMO to support the disposal action.

13.25.12 Emergency Disposal

a. In the event that an ordnance item or ordnance waste becomes damaged or unstable to the point where it is immediately dangerous to life or health, organizations and contractors shall immediately contact Safety and Mission Assurance and NASA EAB to initiate an emergency disposal operation.

b. The NASA EAB shall immediately notify the SLD 45 EOD Office, SLD 45 Range Safety Office, SLD 45 Environmental Office, and FDEP about the incident.

c. Once an emergency disposal plan is developed and agreed to by all stakeholders, the NASA EAB shall coordinate with the FDEP and, if necessary, obtain an emergency hazardous waste disposal permit.

d. Once an emergency disposal plan is developed and agreed to by all stakeholders, the SLD 45 EOD Office shall execute the emergency disposal operation IAW the emergency hazardous waste disposal permit conditions.

13.25.13 Ordnance Waste Storage Extensions

a. Organizations and contractors shall actively manage their ordnance waste and take measures to ensure that their ordnance waste is disposed of in a timely manner and as required by hazardous waste storage time limits.

- b. In the event that hazardous ordnance waste stored at a 90-day hazardous waste storage area cannot be disposed at the CCSFS EOD Range or shipped offsite for disposal within the 90-day limit, organizations and contractors shall notify the NASA EAB before the 75th day and provide a justification letter describing why an extension is needed.
- c. The NASA EAB will formally request extensions (only in 30-day increments) from the FDEP until the ordnance waste is disposed of at the CCSFS EOD Range or shipped offsite for disposal at a commercial disposal facility.

13.25.14 Recordkeeping and Regulatory Reporting

- a. The KSC WMO shall maintain all disposal records, manifests, and certificates of disposal for all ordnance waste disposed of by NASA organizations and contractors.
- b. The KSC WMO shall incorporate ordnance disposal activities (CCSFS EOD Range and offsite commercial disposal facilities) into biennial hazardous waste reports submitted by KSC to the FDEP.

CHAPTER 14. LANDFILL

14.1 Background and Regulatory Requirements

14.1.1 KSC has two unlined Class III landfills (one operational and one closed) on Schwartz Road east of State Road 3. The landfills are authorized under permits issued by the FDEP. The KSC services contractor operates and maintains both landfills.

14.1.2 [FAC 62-701](#) is the regulation for solid waste management facility construction, operation, closure, and permitting in the state of Florida.

14.1.3 Organizations and contractors shall ensure that only authorized wastes are delivered to the landfill for disposal.

14.2 Authorized Waste

The following types of waste, generated by KSC organizations and contractors, are authorized for disposal at the KSC Landfill:

- a. Yard Trash - Vegetative matter resulting from landscaping maintenance or land clearing operations, including materials such as tree and shrub trimmings, grass clippings, palm fronds, trees, and tree stumps
- b. Construction and Demolition Debris - Materials considered to be non-water soluble and non-hazardous in nature, including but not limited to steel, brick, glass, concrete, asphalt, pipe, gypsum wallboard, dry electrical equipment, and lumber. This includes rocks, soils, tree remains, trees, and other vegetative matter which normally results from land clearing or development from a construction project.
- c. Shredded Waste Tires - "Shredded waste tire" means a tire that is no longer suitable for its originally intended purpose because of wear, damage, or defect, and that has been reduced in size by cutting, grinding, shredding, milling, or rasping.
- d. NRACM (see additional guidance and requirements in [Section 14.4](#) of this KNPR).
- e. Carpet and furniture, however recycling is preferred.
- f. Non-pressure treated wood and wood scraps.
- g. Certain PCB bulk product wastes (see additional guidance and requirements below in [Section 14.5](#) of this KNPR).
- h. Certain Spent Blast Media

(1) In general, spent blast media shall be managed and disposed of as a controlled or hazardous waste according to the procedures and requirements of [Chapter 13](#) of this KNPR. On a case-by-case basis, the NASA EAB may approve the disposal of spent blast media in the KSC landfill if it meets certain conditions (e.g., it is non-hazardous waste under RCRA regulations, an unregulated waste under TSCA regulations, and a low risk for leaching and potential future remedial actions).

(2) Organizations and contractors shall obtain approval by submitting a completed [KSC Form 28-1117](#) to the NASA EAB.

(3) Organizations and contractors shall bring a copy of the approved form with each waste load delivery to the landfill.

i. Clean soil (used as landfill cover material).

j. Other waste materials specifically approved by the FDEP that are not expected to produce leachate, which poses a threat to public health or the environment. Waste generators shall contact the NASA EAB who will request approval from the FDEP.

14.3 Unauthorized Waste

The following wastes are not authorized for disposal at the KSC Landfill:

a. Any waste not permitted by FDEP regulations to be disposed of in a Class III landfill as defined in [FAC 62-701](#).

b. Hazardous wastes as described by RCRA regulations

c. Liquid and oily wastes (containerized or non-containerized)

d. Paint chips, coating chips, paint chips mixed with blast media, and coating chips mixed with blast media unless approved by the NASA EAB

e. Putrescible waste and general office trash

f. Pressure treated wood (including chromated copper arsenate treated wood)

g. Liquid PCBs

h. Oil-containing or oil-contacted electrical and mechanical equipment (drained or not drained)

i. RACM

j. Biomedical waste

k. Lead-acid batteries

l. Tires (other than "shredded waste tires")

m. White goods or appliances

n. Small capacitors

o. Fluorescent light ballasts

p. Drums (empty or full)

- q. Contaminated soil
- r. Materials that are recycled at KSC such as cardboard, office paper, glass bottles, plastic bottles, steel, copper, and lead
- s. Wastes from experimental processes unless approved via PWQ/TRP process

14.4 Asbestos Disposal at the Kennedy Space Center Landfill

14.4.1 The KSC Class III landfill only accepts NRACM for disposal. Before disposing of NRACM in the KSC landfill, organizations and contractors must obtain approval by submitting a completed [KSC Form 28-1084](#) to the NASA EAB. RACM shall be disposed of off-Center at an appropriate facility (e.g., Brevard County Landfill).

14.4.2 If disposal of the NRACM waste in the KSC Class III landfill is not approved, the generator shall find an appropriate offsite disposal location.

14.4.3 Once written approval from the NASA EAB has been obtained, organizations and contractors shall abide by the following conditions to dispose of the NRACM waste at the KSC landfill:

- a. The waste generator or hauler shall notify and make arrangements with the KSC landfill operator at least 24 hours before the delivery of NRACM waste.
- b. The waste generator or hauler shall provide the quantity of the waste and the scheduled arrival date at the landfill.
- c. The waste generator or hauler shall deliver NRACM waste to the KSC landfill during regular landfill hours before 1400 hours.
- d. The waste generator or hauler shall ensure the waste is packaged as if it were regulated asbestos and the physical dimensions of the waste are within the handling capabilities of the landfill disposal equipment (less than 8 foot sections).

14.5 Polychlorinated Biphenyl Bulk Product Waste Disposal at the Kennedy Space Center Landfill

14.5.1 There is documented existence of PCB in various building materials (such as paints, coatings, caulk, mastic, window glazing, adhesives, gaskets, cable insulation, etc.) across KSC and NASA-operated facilities at CCSFS. The KSC Class III landfill accepts certain types of PCB bulk product waste for disposal. PCB bulk product waste is defined in [40 CFR 761.3](#) as waste derived from manufactured products containing PCBs in a non-liquid state at any concentration where the concentration of PCBs at the time of designation for disposal is greater than or equal to 50 ppm.

14.5.2 PCB Bulk Product Waste Acceptable for Disposal in the KSC Landfill:

- a. Construction and demolition debris that contains or may contain PCB bulk product waste, provided there are no materials in the debris that are specifically prohibited for disposal in the landfill

- b. Dry electrical equipment (items that do not use oil as a heat transfer or dielectric fluid) with PCB paints or coatings, provided there are no materials in the electrical equipment that are specifically prohibited for disposal in the landfill

14.5.3 PCB Bulk Product Waste Not Acceptable for Disposal in the KSC Landfill:

- a. Oil-containing or oil-contacted electrical equipment (drained or not drained)
- b. Oil-containing or oil-contacted mechanical equipment (drained or not drained)
- c. Construction and demolition debris that contains materials specifically prohibited for disposal in the landfill
- d. Paint chips, paint chips mixed with blast media, caulk, mastic, or any other PCB-containing materials physically separated and containerized from other construction or demolition debris where the total PCB concentration is greater than 50 ppm

14.5.4 KSC organizations and contractors may assume that suspect materials are PCB bulk product waste without sampling but must manage the materials according to PCB bulk product waste storage requirements in [40 CFR 761.65\(c\)\(9\)](#) (e.g., store the waste on a lined impervious surface or in a sealed container that is covered from precipitation) until it is disposed of.

14.6 Landfill Operations

14.6.1 The KSC services contractor shall operate and maintain the landfills according to all applicable regulations, permit requirements, and the [EAP-REF-0001](#).

14.6.2 The KSC services contractor shall maintain a copy of the latest closed landfill permit, operational landfill permit, and approved KSC Landfill Operations Plan at the landfill scale house.

14.6.3 Records required by [FAC 62-701](#) and permit-specific conditions are inspected on a routine basis. Records of daily operations, maintenance, load checking, and training shall be maintained by the operational organization and provided to NASA EAB for transmittal to the FDEP IAW permit conditions.

14.6.4 KSC Schwartz Road Landfill Class III Operations Plan

- a. The KSC services contractor shall maintain the current KSC Schwartz Road Landfill Class III Operations Plan. All changes to the KSC Schwartz Road Landfill Class III Operations Plan must be approved by the NASA EAB and the FDEP.
- b. The KSC services contractor shall submit the revised KSC Schwartz Road Landfill Class III Operations Plan to the NASA EAB.
- c. The NASA EAB shall submit the revised KSC Schwarz Road Landfill Class III Operations Plan to the FDEP for approval.

14.6.5 The NASA EAB shall perform all required notifications and reporting to regulatory agencies regarding the KSC landfills.

14.7 Compliance Inspections

14.7.1 The NASA EAB shall implement an inspection program to monitor landfill operations and ensure compliance with [FAC 62-701](#), permit conditions, and the KSC Schwartz Road Landfill Class III Operations Plan.

14.7.2 The NASA EAB shall coordinate and attend all landfill inspections by regulatory agencies.

14.7.3 The NASA EAB shall respond to and correspond with regulatory agencies regarding potential non-compliance issues or regulatory violations.

14.8 Sampling and Reporting

14.8.1 The KSC environmental support contractor shall:

- a. Conduct all permit-required groundwater sampling, surface water sampling, and gas monitoring at the landfills and submit regulatory reports to the NASA EAB at least ten working days prior to the date due to FDEP.
- b. Use a state-certified laboratory to analyze samples.
- c. Maintain all landfill sampling and analysis records for the NASA EAB.

14.8.2 The KSC services contractor shall prepare all permit-required operating reports and submit them to the NASA EAB at least ten working days prior to the date due to FDEP.

14.8.3 The NASA EAB shall submit all permit-required sampling and operating reports to the FDEP.

14.9 Permit Renewals

14.9.1 The KSC environmental support contractor shall prepare the permit renewal application package, including [FDEP Form 62-701.900\(1\), Forms](#), required supporting documentation, an updated landfill monitoring plan, and an updated landfill operating plan, for the landfills and submit them to the NASA EAB for review at least 30 calendar days prior to the date due to FDEP.

- a. The KSC environmental support contractor shall submit five copies of the final application package to the NASA EAB.
- b. The KSC environmental support contractor shall ensure that a PE registered in the state of Florida signs and seals any designs, site plans, specifications, drawings, documents, or forms required by [FAC 62-701](#).

14.9.2 The NASA EAB shall sign the application packages as the Applicant and forward them to the FDEP.

14.9.3 The FDEP will review the permit application for completeness and accuracy. If not satisfied with the permit application, the FDEP will submit an RAI to the applicant to correct any deficiencies, errors, or omissions. Multiple RAIs may be submitted to the applicant until FDEP deems the application package to be complete.

14.9.4 The KSC environmental support contractor shall prepare draft RAI responses (in coordination with the PE) and submit them to the NASA EAB for review and comment.

14.9.5 The NASA EAB shall submit the final RAI responses to the FDEP.

14.9.6 When the permit application is approved, the NASA EAB shall forward the new permit to the KSC services contractor.

CHAPTER 15. BIOMEDICAL WASTE

15.1 Background and Regulatory Requirements

15.1.1 Biomedical waste is any solid or liquid waste that may present a threat of infection to humans, including non-liquid tissue, body parts, blood, blood products, and body fluids from humans and other primates; laboratory and veterinary wastes which contain human disease-causing agents; and discarded sharps. This definition also includes the following:

- a. Used, absorbent materials saturated with blood, blood products, body fluids, or excretions or secretions contaminated with visible blood and absorbent materials saturated with blood or blood products that have dried.
- b. Non-absorbent, disposable devices that have been contaminated with blood, body fluids, secretions, or excretions visibly contaminated with blood, but which have not been treated by an approved method.

15.1.2 The regulations and requirements for management of biomedical waste are located in [29 CFR 1910.1030](#) and in [FAC 64E-16](#). Organizations and contractors shall manage all biomedical waste according to these regulations.

15.2 Biomedical Waste Management Requirements

15.2.1 The KSC WMO shall pick up and properly dispose of biomedical waste generated by KSC organizations and contractors.

15.2.2 Organizations and contractors generating biomedical waste shall comply with the following requirements:

- a. Biomedical waste mixed with a hazardous waste shall be managed as hazardous waste.
- b. Biomedical waste mixed with radioactive waste shall be managed as radioactive waste.
- c. Biomedical waste mixed with solid waste that is not hazardous waste or radioactive waste shall be managed as biomedical waste.
- d. Sharps and sharps containers shall be managed according to the requirements in [FAC 64E-16.004\(2\)\(d\)](#).

- (1) Sharps shall be discarded at the point of origin into single use or reusable sharps containers.
- (2) Needles and scalpel blades shall be placed into sharps containers and not into double-walled corrugated containers.
- (3) Sharps containers shall be sealed when full.
- (4) Sharps containers shall be considered full when materials placed into it reach the designated fill line, or, if a fill line is not indicated, when additional materials cannot be placed into the container without cramming, or when no additional materials are to be placed in the container.

- (5) Sharps containers shall bear the phrase and the international biological hazard symbol described in paragraph [FAC 64E-16.004\(2\)\(b\)](#).
- (6) Permanently mounted sharps container holders shall bear the phrase and the international biological hazard symbol described in paragraph [FAC 64E-16.004\(2\)\(b\)](#) if this information on the sharps container itself is concealed by the sharps container holder.
- (7) The international biological hazard symbol on sharps containers and sharps container holders shall be at least 1 inch in diameter.
- (8) Reusable sharps containers shall only be emptied into a treatment cart or directly into a treatment unit.
- (9) Reusable sharps containers shall be constructed of smooth, easily cleanable materials, and be decontaminated after each use.
- e. Biomedical waste outer containers shall be rigid, leak-resistant, and puncture-resistant.
- f. Reusable biomedical waste outer containers shall be constructed of smooth, easily cleanable materials, and decontaminated after each use.
- g. The international biological hazard symbol shall be at least 6 inches in diameter on biomedical waste outer containers measuring 19 inches by 14 inches or larger, and at least 1 inch in diameter on biomedical waste outer containers measuring less than 19 inches by 14 inches.
- h. Biomedical waste shall be stored in designated areas away from general traffic flow patterns and accessible only to authorized personnel.
- i. Outdoor biomedical waste storage areas shall be conspicuously marked with the international biological hazard symbol and be secured against vandalism.
- j. Indoor biomedical waste storage areas shall be constructed of smooth, easily cleaned materials that are impervious to liquids, have restricted access, and have a written operating plan.
- k. Biomedical waste storage shall not exceed 30 days at the generating facility.
- (1) The 30-day storage period shall begin when the first non-sharps item of biomedical waste is placed into a red bag, biomedical waste container, or sharps container.
- (2) For sharps containers containing only sharps, the 30-day storage period shall begin when the container is full or sealed.
- (3) Biomedical waste bags and containers shall be clearly marked with the 30-day storage period start date.
- (4) For biomedical waste returning to KSC from flight, the 30-day storage period shall begin the day the biomedical waste becomes accessible from flight storage containers.

- l. Biomedical waste generators shall maintain records at each facility with types and amounts of biomedical wastes generated.
- m. Biomedical waste generators shall properly package biomedical wastes for safe handling, transportation, and disposal.
- n. Biomedical waste generators shall contact the KSC WMO and arrange for biomedical waste pickups before the 30-day storage period expires.
- o. Biomedical waste removed from a returning space vehicle in a state other than Florida shall be disposed of under the rules of that state.

15.3 Training

Prior to commencement of biomedical waste duties, organizations and contractors shall provide biomedical waste and bloodborne pathogen training (initial and annual refresher) to all personnel generating, handling, packaging, and shipping biomedical waste.

15.4 Records

Organizations and contractors shall maintain all biomedical waste records (such as generation logs, waste shipping manifests, training certificates, operating plans, autoclave logbooks, and biomedical waste bag reports) required by [FAC 64E-16](#) for at least three years.

15.5 Inspections

The NASA EAB shall inspect biomedical waste storage locations, waste records, and training records on a periodic basis to ensure compliance with biomedical waste regulations.

CHAPTER 16. BLOODBORNE PATHOGENS AND EXPOSURE CONTROL

Environmental requirements for bloodborne pathogens and exposure control are located in [KSC-UG-1904](#).

CHAPTER 17. STORAGE TANKS

17.1 Background and Regulatory Requirements

17.1.1 The EPA and FDEP have promulgated regulations regarding the design, construction, installation, registration, operation, maintenance, repair, closure, and disposal of petroleum storage tank systems. These regulations are designed to minimize the occurrence of and the environmental risks from releases and discharges from registered storage tank systems. The information provided in this Chapter only applies to storage systems registered with the FDEP.

17.1.2 Federal underground storage tank (UST) system regulations are located in [40 CFR 280](#).

17.1.3 The EPA has authorized the FDEP to administer Federal UST regulations in the state of Florida.

17.1.4 Florida UST system regulations are located in [FAC 62-761](#). USTs with individual capacities greater than 110 gallons must be registered with the FDEP prior to being placed into service.

17.1.5 There are currently no Federal regulations covering aboveground storage tank (AST) systems except that [40 CFR 112](#) requires SPCC plans for oil storage (see [Chapter 5](#) of this KNPR for SPCC requirements).

17.1.6 Florida AST system regulations are located in [FAC 62-762](#). ASTs with volumes greater than 550 gallons must be registered with the FDEP prior to being placed into service.

17.1.7 The FDEP has delegated the compliance inspection program for FDEP registered petroleum storage tank systems in Brevard County to the Brevard County Natural Resources Management Department (BCNRMD). The BCNRMD inspects all registered petroleum storage tank systems at KSC.

17.1.8 Organizations and contractors shall comply with all applicable Federal, state, and local storage tank system regulations and the requirements of this KNPR.

17.1.9 All communication and interface with regulatory agencies shall be coordinated through and performed by the NASA EAB.

17.2 Inventory and Notifications

17.2.1 Organizations and contractors shall provide an accurate listing of all registered tank systems, whether in-service or out-of-service, at their facilities to the NASA EAB when requested.

17.2.2 Organizations and contractors shall immediately notify the NASA EAB of any non-compliance concerns, maintenance, repairs, or change in status (such as changing contents, removing the system from service, or abandoning the system) associated with registered storage tank systems.

17.2.3 When required, the NASA EAB shall notify regulatory agencies and change registration information with the FDEP to reflect the current inventory and status.

17.2.4 Organizations and contractors shall report any spill, release, overfill, or other discharge of a regulated substance from a storage tank system according to the requirements in Chapter 4 of this KNPR.

17.3 Installation and Modification of Storage Tank Systems

17.3.1 By using the KSC EC process outlined in [Chapter 3](#) of this KNPR, organizations and contractors shall immediately notify the NASA EAB regarding any planned project involving the installation, modification, repair, or the removal of a registered storage tank system.

17.3.2 The NASA EAB shall review the proposed project, provide recommendations, determine applicable regulatory requirements, coordinate with regulatory agencies, and schedule all required regulatory inspections.

17.3.3 Organizations and contractors shall ensure that the design, construction, or modification of a registered tank system meets the requirements of [40 CFR 280](#), [FAC 62-761](#), and [FAC 62-762](#).

17.3.4 If the new storage tank system must be registered according to [FAC 62-761](#) or [FAC 62-762](#), or if the modification requires a change in the registration, the responsible organization or contractor shall prepare the registration package, including the [FDEP Form 62-761.900\(2\)](#) and all required supporting documentation, and submit it to the NASA EAB.

17.3.5 The NASA EAB shall sign registration forms as the Owner and submit the registration packages to the FDEP.

17.3.6 When the storage tank system has been inspected and approved by the BCNRMD, the responsible organization or contractor shall place the storage tank system into service.

17.4 Inspecting, Monitoring, Testing, and Reporting

Organizations and contractors responsible for registered storage tank systems shall:

17.4.1 Conduct all required inspections, monitoring, and testing for assigned registered storage tank systems according to the requirements in [FAC 62-761](#) or [FAC 62-762](#).

17.4.2 Perform visual inspections and release detection evaluations of assigned registered storage tank systems and associated secondary containment at least once a month (not exceeding 35 days between inspections).

17.4.3 Inspect the integrity of the storage tank systems and secondary containment at least once a month (not exceeding 35 days between inspections).

17.4.4 Immediately report any non-compliance items, regulatory violations, deficiencies, corrosion, secondary containment integrity issues, and equipment problems to the NASA EAB and, if required by the NASA EAB, remove the storage tank system from service until repairs are made or the non-compliance items are corrected.

17.4.5 Correct and repair non-compliance items, regulatory violations, deficiencies, corrosion, secondary containment integrity issues, and equipment problems.

17.5 Recordkeeping

17.5.1 Each KSC organization responsible for registered storage tank systems shall maintain all activity, inspection, monitoring, and testing records required by [FAC 62-761](#) and [FAC 62-762](#) including:

- a. Monthly inspection logs indicating the dates of the inspections, the Release Detection Response Level detection methods and results, findings or problems, and corrective actions taken.
- b. Daily inventory measurements and reconciliation calculations for vehicular fuel tanks.
- c. Dates of upgrade or replacement of existing storage tank systems.
- d. Results of maintenance examinations on storage tank systems.
- e. Results of all tightness tests and integrity tests.
- f. Descriptions and dates of all repairs.
- g. Release detection equipment specifications and instructions.

17.5.2 Records Retention

- a. Organizations and contractors shall maintain all assigned registered storage tank system activity, inspection, monitoring, and testing records for at least three years.
- b. Organizations and contractors shall submit records related to registered storage tank system installations, registrations, modifications, upgrades, and closures to the NASA EAB.
- c. The NASA EAB shall retain records related to storage tank system installations, registrations, modifications, upgrades, and closures according to the appropriate records retention schedule.

17.6 Closures

17.6.1 Organizations and contractors shall immediately notify the NASA EAB regarding any planned closure of any registered storage tank system.

17.6.2 The responsible organization and contractor shall:

- a. Close registered storage tank systems according to the requirements in [FAC 62-761](#) and [FAC 62-762](#).
- b. Conduct a closure assessment, prepare a closure assessment report, and submit the closure assessment report to the NASA EAB.

17.6.4 The NASA EAB shall submit the closure assessment report and revised registration paperwork to the FDEP.

17.7 Compliance Inspections

17.7.1 The NASA EAB shall:

- a. Conduct periodic compliance inspections of registered storage tank systems to ensure compliance with regulatory requirements and the requirements of this KNPR.
- b. Attend all regulatory compliance inspections, respond to regulatory agencies regarding potential non-compliance issues or violations, and schedule required follow-on inspections with regulatory personnel.

17.7.2 Organizations and contractors shall:

- a. Attend inspections and provide any requested activity, inspection, monitoring, testing, maintenance, or repair records to the inspector.
- b. Implement corrective actions to address any non-compliance issues, violations, deficiencies, and findings identified during inspections and provide corrective action information and status to the NASA EAB when requested.

CHAPTER 18. PESTICIDES

18.1 Background and Regulatory Requirements

18.1.1 A pesticide is any substance or mixture of substances intended to prevent, destroy, repel, or mitigate any pest and includes insecticides, herbicides, fungicides, rodenticides, plant regulators, defoliants, and various other substances used to control pests.

18.1.2 The Federal Government and State of Florida have passed laws and promulgated regulations regarding the production, distribution, sale, use, storage, management, and disposal of pesticides.

a. The Federal Government pesticide law is the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), administered by the EPA.

b. EPA's implementing regulations for FIFRA are located in [40 CFR 150-189](#). FIFRA mandates that EPA regulate the use and sale of pesticides to protect human health and preserve the environment.

18.1.3 The state of Florida has three pesticide laws, administered by the Florida Department of Agriculture and Consumer Services (FDACS):

a. Florida Pesticide Law ([Chapter 487 FS](#))

b. Florida Structural Pest Control Act ([Chapter 482 FS](#))

c. Florida Mosquito Control Law ([Chapter 388 FS](#))

18.1.4 FDACS's implementing regulations for Florida's pesticide laws are located in [FAC 5E-2](#), [FAC 5E-9](#), [FAC 5E-13](#) and [FAC 5E-14](#).

18.1.5 Organizations and contractors shall comply with all Federal and state laws and regulations and requirements of this KNPR regarding pesticide use, storage, management, and disposal.

18.2 Licensing

All pesticide applications at KSC shall be accomplished by, or under the direct supervision of, an applicator licensed by the FDACS Bureau of Compliance Monitoring.

18.3 Pesticide Registration

All pesticides used at KSC shall be registered with the EPA and the FDACS and bear an EPA-approved label.

18.4 Pesticide Use, Disposal, and Labeling Requirements

18.4.1 Organizations and contractors shall only use and dispose of pesticides according to the product instructions or label requirements, or in a manner specified by the EPA or the FDACS.

18.4.2 Organizations and contractors shall dispose of pesticide containers (including empty containers) according to the product instructions or label requirements, or in a manner specified by the EPA or the FDACS.

18.4.3 Organizations and contractors shall ensure that pesticide product labels are securely attached to containers and meet the labeling requirements in [40 CFR 156](#) (also found in EPA's pesticide Label Review Manual).

18.5 Pesticide Storage and Operational Requirements

18.5.1 Organizations and contractors shall:

- a. Maintain a current list and inventory of all pesticides stored or used.
- b. Maintain current SDS for all pesticides stored or used.
- c. Ensure that SDS are readily available for each pesticide listed on the current inventory.
- d. Store pesticides only in approved facilities.
- e. Ensure that pesticide storage facilities and rooms are dry, well-ventilated, and dedicated to pesticide operations.
- f. Ensure that pesticide storage facilities and rooms are secure to prevent unauthorized entry.
- g. Place identification and warning signs (such as "No Smoking" signs, "Authorized Personnel Only" signs, "Pesticide Storage" signs, and "In case of Emergency, CONTACT:" signs) on pesticide storage facilities and rooms to advise personnel of the contents and hazards.
- h. Store pesticide containers off the ground with the labels visible.
- i. Store pesticide containers in rows with lanes to provide access.
- j. Ensure that pesticide containers are in good condition and that all lids and bungs are tightly closed.
- k. Segregate different pesticide formulations in storage.
- l. Regularly check pesticide containers for corrosion and leaks.
- m. Keep adequate spill cleanup materials and supplies on hand for the types of pesticides stored and used.

18.5.2 Organizations and contractors shall:

- a. Report any spills, leaks, and releases of pesticides to the NASA EAB according to the requirements in [Chapter 4](#) of this KNPR.

- b. Follow safety procedures and precautions and use PPE directed by the pesticide label or instructions.
- c. Label equipment used for pesticides as “Pest Control” or other appropriate identifying language.
- d. Remove equipment used for pesticide application from the site or use the equipment for other purposes unless it has been properly decontaminated.
- e. Dispose of decontamination water.

18.5.3 Organizations and contractors that store, mix, and apply pesticides shall:

- a. Require pesticide handlers to wear appropriate PPE and clothing while mixing pesticides, applying pesticides, and cleaning equipment as directed by the product label.
- b. Ensure pesticide handlers receive physical examinations and blood testing annually.
- c. Decontaminate personnel as directed by the product label.
- d. Direct personnel to the KSC Occupational Health Facility in the event of an accidental or suspected exposure to pesticides.

18.6 Recordkeeping Requirements

18.6.1 Organizations and contractors shall:

- a. Keep at a minimum the following record information for restricted use, non-restricted use, and experimental use pesticide applications for a minimum of two years:
 - (1) Name of the person who applied the pesticide.
 - (2) Date of the pesticide application.
 - (3) Location of application site (i.e., building number, north side railroad tracks, camera pads, Pad 39B, Rocket Garden).
 - (4) Brand name and EPA registration number of the pesticide product applied.
 - (5) Total amount (pounds, gallons, etc.) of formulated product applied.
- b. Maintain current training records (initial and refresher) and physical examination records for personnel handling or applying pesticides at KSC.

18.7 Compliance Inspections

18.7.1 The NASA EAB shall:

- a. Conduct periodic compliance inspections of pesticide storage locations, mixing areas, equipment, and records to ensure compliance with regulatory requirements and the requirements of this KNPR.

- b. Attend any regulatory compliance inspections and respond to regulatory agencies regarding potential non-compliance issues or violations.

18.7.2 Organizations and contractors shall:

- a. Attend all pesticide compliance inspections and provide records to the inspector.
- b. Implement corrective actions to address any non-compliance issues, violations, deficiencies, and findings identified during inspections and provide corrective action information and status to the NASA EAB when requested.

CHAPTER 19. POLYCHLORINATED BIPHENYL MANAGEMENT

19.1 Background and Regulatory Requirements

19.1.1 PCBs are regulated by the EPA under the TSCA. Federal PCB regulations are located in [40 CFR 761](#). These regulations establish prohibitions and requirements for the manufacture, processing, distribution in commerce, use, disposal, storage, and marking of PCBs and PCB items.

19.1.2 At KSC, the NASA EAB develops requirements and implements a management program for PCB use, storage, and disposal. This includes the processes for identification, marking, retro-filling, storage, inspection, inventory, and disposal of PCBs and PCB items.

19.1.3 The NASA EAB shall perform all notifications and reporting to regulatory agencies concerning PCB compliance at all NASA-operated facilities at KSC and CCSFS.

19.1.4 The following PCB Items may be stored temporarily in an area that does not comply with the requirements of paragraph [40 CFR 761.65\(b\)](#) for up to 25 days from the date of their removal from service, provided that a notation is attached to the PCB item or a PCB container (containing the item) indicating the date the item was removed from service:

- a. Non-leaking PCB articles and PCB equipment.
- b. Leaking PCB articles and PCB equipment if the PCB Items are placed in a non-leaking PCB container that contains sufficient sorbent materials to absorb any liquid PCBs remaining in the PCB Items.
- c. PCB containers containing non-liquid PCB such as contaminated soil, rags, and debris.
- d. PCB containers containing liquid PCBs at concentrations of greater than or equal to 50 ppm, provided an SPCC plan has been prepared for the temporary storage area IAW part [40 CFR 112](#) and the liquid PCB waste is in packaging authorized in the DOT Hazardous Materials Regulations at [49 CFR 171-180](#) or stationary bulk storage tanks.
- e. Any storage area subject to the requirements of paragraph 19.1 of this section shall be marked as required in subpart [40 CFR 761.40\(a\)\(10\)](#)
- f. For more information on other PCB waste storage for disposal reference [40 CFR 761.65](#).

19.2 Management and Disposal of Oil-Containing or Oil-Contacted Electrical and Mechanical Equipment

19.2.1 Oil-containing or oil-contacted electrical equipment includes transformers, switches, capacitors, cable, reclosers, regulators, bushings, electromagnets, etc., that contain oil (dielectric fluid or heat transfer fluid).

19.2.2 Oil-containing or oil-contacted mechanical equipment includes cranes, lifts, elevators, jacks, stands, forklifts, and other hydraulic machines that contain oil (hydraulic fluid).

19.2.3 Oil inside electrical equipment shall be sampled to determine if the equipment is classified as PCB (greater than 500 ppm PCB), PCB-contaminated (between 50 and 500 ppm PCB), or non-PCB (less than 50 ppm PCBs).

- a. If possible, sampling shall be done prior to taking the equipment out of service.
- b. Once the equipment is taken out of service, the equipment and oil shall be managed IAW [40 CFR 761.60](#) or [40 CFR 761.62](#).

19.2.4 Oil inside mechanical equipment may also contain PCBs. If the piece of mechanical equipment was manufactured prior to 1979 and will be disposed of, the oil shall be sampled for PCBs unless there is documentation or knowledge that the oil does not contain any PCBs.

19.2.5 There is documented existence of PCBs in various paints and coatings (including electrical equipment and mechanical equipment paint) across KSC and NASA-operated facilities at CCSFS. If the total PCB concentration in the paint is greater than or equal to 50 milligrams (mg) per kg, the equipment is a PCB waste and shall be subject to PCB regulations even if the oil does not contain any PCB.

19.2.6 All organizations disposing of oil or equipment that potentially contains PCBs shall use the PWQ and TRP process outlined in [Chapter 13](#) of this KNPR for managing and handling the waste streams.

19.2.7 Electrical equipment that has been historically retro-filled (flushing and replacement of oil to reduce PCB concentrations and the equipment's regulated category) and certified as "Non-PCB" or "PCB-Contaminated" may no longer meet those classification requirements at the time of disposal due to leaching of PCBs from internal components back into the cleaner oil. Sampling of oil for this equipment is required and shall occur just prior to (no more than six months in advance of) taking the equipment out of service.

19.2.8 Paints and coatings manufactured prior to 1979 may contain PCB. Sampling and testing for PCB in paints and coatings is recommended to maximize equipment recycling and to minimize waste disposal.

- a. If the paint is not sampled and the equipment was manufactured prior to 1979, generators shall assume that the PCB concentrations in the paint are greater than 50 mg for every kg and manage the equipment as a regulated PCB waste even if the oil contains no PCB.
- b. If the equipment contains no layers of paint manufactured prior to 1979, or there is documentation such as SDS etc., that the paint contains less than 50 mg for every kg PCB, paint sampling does not need to be conducted.
- c. Even if the PCB concentration in the oil is greater than 50 mg per kg, the KSC WMO may be able to decontaminate, reclassify, and recycle the equipment through a licensed vendor if the paint is sampled and found to contain less than 50 mg for every kg PCB.

19.2.9 Oil-containing equipment where the PCBs concentrations in both the oil and paint are less than 50 mg per kg may be taken to the KSC RRMF for resale or recycling or the Contractor can accept the drained equipment for reuse or recycling (possible project cost off-set).

19.2.10 If equipment is taken to the RRMF, oil must be removed from the equipment, containerized, and labeled according to the PWQ and TRP instructions, and disposed of through the KSC WMO. [KNPR 4000.1](#), [NPR 4200.1](#), and [NPR 4200.2](#) provide requirements for turning in excess equipment to the RRMF. Sample results are required to be provided to the RRMF. If equipment is accepted by the contractor, oil does not need to be removed as long as transformer does not leak and the contractor provides NASA with a copy of insurance and a signed letter of exchange with the US EPA ID of the transformer refurbishment company receiving the transformer before transporting off KSC.

19.2.11 Oil-containing or oil-contacted equipment (drained or not drained) cannot be disposed of at the KSC landfill.

19.2.12 In rare instances, it may be beneficial to service (drain, flush, and refill) and reclassify a piece of electrical equipment to lower its regulated PCB category. [40 CFR 761](#) contains strict guidelines and rules for reclassification of electrical equipment. All reclassification efforts shall be approved by the NASA EAB and coordinated through the KSC WMO.

19.2.13 Leaking oil-filled equipment must be placed in appropriate non-leaking containers or drums with adequate absorbent materials.

19.2.14 Refer to [Section 19.6](#) of this KNPR for the cleanup, management, and disposal of environmental media (soil, asphalt, concrete, gravel, etc.) potentially contaminated with PCBs.

a. PCB-contaminated environmental media is a regulated waste stream and must be properly disposed of regardless of whether it is a recent or historical release.

b. If a spill occurs or ongoing release of potentially PCB-containing oil is discovered, the organization shall report and control the spill IAW the requirements in [Chapter 4](#) of this KNPR.

19.2.15 [Table A-1](#) summarizes requirements and options for managing and disposing of oil-containing and oil-contacted equipment.

Table A-1: Requirements and Options for Managing and Disposing of Oil-Containing and Oil-Contacted Electrical and Mechanical Equipment

Total PCB Concentration in Oil	Oil Management, Storage, and Disposal Requirements	Total PCB Concentration in Paint	Equipment Management, Storage, and Disposal Requirements
Greater than or equal to 50 ppm	Oil shall be drained from the equipment and disposed through KSC WMO.	Less than 50 ppm	Equipment shall be disposed of through KSC WMO.
--OR--	Drained oil shall be containerized and labeled according to the PWQ and TRP instructions (DOT approved container and PCB label with the date the equipment was removed from service).	--OR--	Equipment disposal shall be coordinated through property accountability personnel.
PCB concentration in the oil is unknown or is assumed to be greater than or equal to 50 ppm because the oil cannot be reasonably sampled (e.g., completely sealed bushing).	Drained oil shall either be picked up by KSC WMO <u>within 24 hours</u> from the date the equipment was removed from service or stored onsite for up to 30 calendar days providing the drained oil is containerized and labeled according to PWQ and TRP instructions and stored	Paint sampling not needed because all paint on the equipment was manufactured after 1979 or there is documentation that the PCB concentration in the paint is less than 50 ppm.	Equipment shall be staged or stored in a manner that prevents any leaking of residual oil. If the PCB concentration in the oil is greater than 500 ppm, the drained equipment shall be marked with a PCB label (with the date the equipment was removed from service), stored on an impervious surface, covered from rain, and moved offsite within 30 calendar days from the date the equipment was removed from service. If the PCB concentration in the oil is greater than or equal to 50 ppm but less than 500 ppm, the drained equipment shall be stored on an impervious surface, covered from rain, and moved offsite as soon as practicable.

	<p>under a site-specific SPCC plan.</p> <p>Notify KSC WMO at least 5 calendar days prior to the required oil pickup date.</p>	<p>Greater than or equal to 50 ppm.</p> <p>--OR--</p> <p>Paint was not sampled and is assumed to have a PCB concentration greater than or equal to 50 ppm.</p>	<p>Equipment shall be disposed of through KSC WMO.</p> <p>Equipment disposal shall be coordinated through property accountability personnel.</p> <p>Equipment shall be staged or stored in a manner that prevents any leaking of residual oil.</p> <p>If the PCB concentration in the oil is greater than 500 ppm, the drained equipment shall be marked with a PCB label (with the date the equipment was removed from service), stored on an impervious surface, covered from rain, and moved offsite within 30 calendar days from the date the equipment was removed from service.</p> <p>If the PCB concentration in the oil is greater than or equal to 50 ppm but less than 500 ppm, the drained equipment shall be marked with a PCB label (with the date the equipment was removed from service), stored on an impervious surface, covered from rain, and moved offsite as soon as practicable (not to exceed 180 calendar days from the date the equipment was removed from service).</p>
Total PCB Concentration in Oil	Oil Management, Storage, and Disposal Requirements	Total PCB Concentration in Paint	Equipment Management, Storage, and Disposal Requirements
Less than 50 ppm	<p>Option 1: Dispose of oil through KSC WMO as used oil.</p> <ul style="list-style-type: none"> Drained oil shall be containerized and labeled according to 	<p>Less than 50 ppm</p> <p>--OR--</p>	<p>Option 1: Drained equipment can be excessed through the RRMF.</p> <ul style="list-style-type: none"> Equipment shall be staged or stored in a manner that prevents any leaking of residual oil.

	<p>the PWQ and TRP instructions.</p> <ul style="list-style-type: none"> Onsite storage of oil containers shall comply with used oil and SPCC regulations. <p>Option 2: Contractor can accept the oil as a project cost off-set for reuse, recycling, or energy recover <u>only if</u> the PCB concentration is below 1 ppm.</p> <ul style="list-style-type: none"> The Contractor shall follow all Federal and State used oil regulations. Onsite storage of oil shall comply with used oil and SPCC regulations. <p>Option 3: Reuse the oil in other electrical equipment at KSC.</p> <ul style="list-style-type: none"> Onsite storage of oil shall comply with used oil and SPCC regulations. 	<p>Paint sampling not needed because all paint on the equipment was manufactured after 1979 or there is documentation that the PCB concentration in the paint is less than 50 ppm.</p>	<ul style="list-style-type: none"> Provide PCB sampling results and required excess forms to the RRMF. <p>Option 2: Contractor can accept the drained equipment for reuse or recycling (possible project cost off-set).</p> <ul style="list-style-type: none"> Equipment shall be staged or stored in a manner that prevents any leaking of residual oil. Transfer of equipment shall be coordinated through property accountability personnel. <p>Option 3: Drained equipment can be reused elsewhere at KSC.</p> <p>Equipment shall be staged or stored in a manner that prevents any leaking of residual oil.</p>
		<p>Greater than or equal to 50 ppm.</p> <p>--OR--</p> <p>Paint was not sampled and is assumed to have a PCB concentration greater than or equal to 50 ppm.</p>	<p>Equipment shall be disposed of through KSC WMO.</p> <p>Equipment shall be stored in a manner that prevents any leaking of residual oil.</p> <p>Equipment disposal shall be coordinated through property accountability personnel.</p> <p>Drained equipment shall be marked with a PCB label (with the date the equipment was removed from service), stored on an impervious surface, covered from rain, and moved offsite as soon as practicable (not to exceed 180 calendar days from the date the equipment was removed from service).</p>

19.3 Management and Disposal of Small Capacitors and Fluorescent Light Ballasts

19.3.1 PCBs were commonly used in the small capacitors and fluorescent light ballasts (in potting material and capacitors) manufactured through 1979 and must be properly managed according to PCB regulations.

19.3.2 Definition of Small Capacitor: Small capacitors contain less than 1.36 kg (3 pounds) of dielectric fluid or have a total volume of less than 1,639 cubic centimeters (100 cubic inches) if the weight of dielectric fluid is unknown. A capacitor whose volume is greater than 1,639 cubic centimeters (100 cubic inches) but less than 3,278 cubic centimeters (200 cubic inches) may still be managed as a small capacitor if the total weight of the capacitor is less than 4.08 kg (9 pounds).

19.3.3 Large capacitors that contain oil must be managed according to the requirements in [Section 19.2](#) of this KNPR.

19.3.4 All organizations disposing of small capacitors and fluorescent light ballasts that potentially contain PCB shall use the PWQ and TRP process outlined in [Chapter 13](#) of this KNPR for managing, handling, and disposing of these waste streams. Sampling small capacitors and ballasts for PCB is not required.

19.3.5 Small capacitors and ballasts that are marked as non-PCB will be segregated and managed separately from small capacitors and ballasts that are marked as containing PCB or are unmarked.

19.3.6 Unmarked small capacitors and ballasts must be managed as if they contain PCB material. However, ballasts manufactured after 1998 with no markings can be managed as "non-PCB."

19.3.7 All small capacitors and fluorescent light ballasts shall be containerized and labeled according to PWQ and TRP instructions and disposed of through the KSC WMO.

19.3.8 Leaking small capacitors and ballasts shall be placed in appropriate non-leaking containers or drums and disposed of through the KSC WMO.

19.3.9 Small capacitors and fluorescent light ballasts cannot be disposed at the KSC landfill.

19.4 Management and Disposal of Polychlorinated Biphenyl Contaminated Wastewater

19.4.1 There is documented existence of PCB in older (pre-1979) paints and coatings across KSC and in NASA-operated facilities at CCSFS. Therefore, PCB contaminated wastewater or slurries could be produced from activities such as high-pressure washing or water blasting of buildings or structures that have PCB containing paints and coatings.

19.4.2 Organizations must follow the industrial wastewater management requirements outlined in [Chapter 12](#) of this KNPR. In addition, wastewater that is contaminated with PCB must be properly managed according to the requirements of [40 CFR 761](#).

19.4.3 PCB contaminated wastewater disposal shall be approved by and coordinated through the KSC WMO using the PWQ and TRP process outlined in [Chapter 13](#) of this KNPR.

19.4.4 PCBs can be removed from the wastewater without a regulatory treatment permit as long as the PCB decontamination requirements in [40 CFR 761.79](#) are followed. The decontamination process shall be reviewed and approved by the NASA EAB. The removed PCB must be containerized and properly disposed through the KSC WMO.

19.5 Management and Disposal of Other Polychlorinated Biphenyl Contaminated Waste

19.5.1 Other wastes that may contain PCB include:

- a. Dry (non-oil-containing) electrical equipment coatings.
- b. Dry (non-oil-containing) mechanical equipment coatings.
- c. Construction and demolition debris.
- d. Building materials (such as paints, coatings, caulk, mastic, window glazing, adhesives, dry cable insulation, etc.).
- e. Coated or painted concrete.
- f. Waste paint chips.
- g. Spent blast media.

NOTE: Requirements for the management and disposal of oil-containing or oil-contacted electrical and mechanical equipment are covered in [Section 19.2](#) of this KNPR.

19.5.2 Building materials, paints, and coatings manufactured prior to 1979 may contain PCB, which has been found in many building materials, paints, and coatings across KSC and NASA-operated facilities at CCSFS.

19.5.3 Any material with a PCB concentration greater than or equal to 50 mg per kg is a regulated waste and must be properly managed and disposed of according to PCB regulations.

NOTE: If a waste item (e.g., door) contains a material (e.g., paint) with a PCB concentration greater than or equal to 50 mg per kg, the entire item is a regulated PCB waste.

19.5.4 All organizations disposing of waste that potentially contains PCB shall use the PWQ and TRP process outlined in [Chapter 13](#) of this KNPR for managing and handling the waste streams.

19.5.5 Sampling and testing for PCBs may be optional depending on the waste disposal location but is recommended to maximize recycling and minimize waste disposal (especially for metals and concrete).

- a. If the waste is not sampled but has the potential to contain PCB, generators shall assume that the PCB concentrations in the paint are greater than 50 mg per kg and manage and dispose of the material as a regulated PCB waste.

b. If the waste contains no materials, paints, or coatings manufactured prior to 1979, or if there is documentation (SDS, etc.) that the materials contain less than 50 mg per kg PCB, sampling and testing for PCB does not need to be conducted.

c. Sampling and testing for other regulated compounds (e.g., heavy metals) may be required to characterize the waste for proper management and disposal.

19.5.6 Disposal of all real property shall be coordinated through the KSC Real Property Office.

19.5.7 Organizations and contractors shall:

a. Properly store, stage, containerize, and prevent the release of any PCB containing materials (including paints, coatings, caulk, mastic, etc.) to the environment.

b. Conduct demolition activities in a manner that limits the potential release of PCB containing materials.

c. Delineate the extent of and remediate any PCB releases to the environment (reference [Section 19.6](#) of this KNPR).

d. Use BMPs and engineering controls during the demolition of structures with potential PCB-containing materials such as:

(1) Contain and process demolition debris on impermeable surfaces (such as concrete, asphalt, tarps, liners, etc.), when possible.

(2) Cover waste piles to prevent contact with precipitation.

(3) Control stormwater runoff from the site.

(4) Conduct regular housekeeping to limit the potential runoff and migration of potential PCB-containing materials.

(5) Remove all demolition debris from demolition areas and debris storage areas upon project completion.

19.5.8 If a demolition project or debris storage area is located on a soil or permeable surface and the debris contains potential PCB-containing materials, the project proponent shall sample, excavate, and properly dispose of any soil or sediment contaminated with PCBs according to requirements outlined in [Section 19.6](#) of this KNPR.

19.5.9 If a decision is made to decontaminate (remove the PCB-containing paint, coating, caulk, adhesive, etc.) metal, concrete, or a piece of equipment so that it can be reused, recycled, or salvaged, the removed PCB-containing paint, coating, caulk, adhesive, etc. shall be containerized, stored, managed, and disposed of according to TSCA regulations.

a. The decontamination process shall be conducted according to the requirements in [40 CFR 761.79](#) and be approved by the NASA EAB.

b. Only certain decontamination methods can be conducted without approval from the EPA.

c. The removed PCB-containing paint, coating, caulk, or adhesive must be disposed of through the KSC WMO.

19.5.10 Tables A-2 through A-5 summarize the requirements and options for managing and disposing of various other PCB-containing waste streams.

Table A-2: Dry Electrical Equipment and Dry Mechanical Equipment (non-oil containing)

Areas With Possible PCBs	Sampling for PCBs Required for Disposal?	PCB Sampling Results	Management, Storage, and Disposal Requirements
Paints Coatings	No (But recommended to maximize reusing and recycling of equipment and minimize waste generation).	Less than 50 ppm. --OR-- Sampling not needed because the equipment was manufactured after 1979 or there is documentation that the PCB concentration in the paint or coating is less than 50 ppm.	Equipment disposal shall be coordinated through property accountability personnel. Option 1: Excess equipment through the RRMF. Provide PCB sampling results and required excess forms to the RRMF. Option 2: Contractor can accept the equipment for reuse or recycling (possible project cost offset). Option 3: Equipment reused elsewhere at KSC. Option 4: Dispose of in KSC Landfill.

Areas With Possible PCBs	Sampling for PCBs Required for Disposal?	PCB Sampling Results	Management, Storage, and Disposal Requirements
		<p>Greater than or equal to 50 ppm.</p> <p>--OR--</p> <p>Equipment was not sampled and assumed to have a PCB concentration greater than or equal to 50 ppm in the paint or coating.</p>	<p>Equipment disposal shall be coordinated through property accountability personnel.</p> <p>Equipment shall be staged or stored according to PCB Bulk Product Waste storage requirements in 40 CFR 761.65(c)(9) until disposed of (e.g., in a container or on a liner that prevents contact with soil and covered from precipitation).</p> <p>Option 1: Dispose of in KSC Landfill.</p> <p>Option 2: Dispose of off-Center through KSC WMO.</p> <p>Option 3: Decontaminate by removing the PCB-containing materials from the equipment according to 40 CFR 761.79 and then recycle or reuse the decontaminated equipment.</p> <ul style="list-style-type: none"> Decontamination process shall be approved by the NASA EAB. Removed PCB-containing material is a regulated waste and shall be collected, containerized, and disposed of through KSC WMO.

Table A-3: Construction and Demolition Debris

Areas With Possible PCBs	Sampling for PCBs Required for Disposal?	PCB Sampling Results	Management, Storage, and Disposal Requirements
Paints Coatings Caulk Mastic Window Glazing Adhesives Dry Cable Insulation	No (But recommended to maximize reusing and recycling of materials and minimize waste generation).	Less than 50 ppm. --OR-- Sampling not needed because all the debris was manufactured after 1979 or there is documentation that the PCB concentrations in all areas is less than 50 ppm.	Equipment disposal shall be coordinated through property accountability personnel. Option 1: Reusable or recyclable materials should be taken to the RRMF. Option 2: Contractor can accept materials for recycling or reuse (possible project cost off-set). Option 3: Dispose of in KSC Landfill.

		<p>Greater than or equal to 50 ppm.</p> <p>--OR--</p> <p>Debris or material was not sampled and assumed to have a PCB concentration greater than or equal to 50 ppm in at least one possible PCB area.</p>	<p>Equipment disposal shall be coordinated through property accountability personnel.</p> <p>Debris shall be staged or stored according to PCB Bulk Product Waste storage requirements in 40 CFR 761.65(c)(9) until disposed of (e.g., in a container or on a liner that prevents contact with soil and covered from precipitation).</p> <p>Option 1: Dispose of in KSC Landfill</p> <p>Option 2: Dispose of off-Center through KSC WMO.</p> <p>Option 3: Decontaminate by removing the PCB-containing materials from the equipment according to 40 CFR 761.79 and then recycle or reuse the decontaminated debris or materials.</p> <ul style="list-style-type: none"> • Decontamination process shall be approved by the NASA EAB. • Removed PCB-containing material is a regulated waste and shall be collected, containerized, and disposed of through KSC WMO.
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Table A-4: Concrete

Areas With Possible PCBs	Sampling for PCBs Required for Disposal?	PCB Sampling Results	Management, Storage, and Disposal Requirements
Paints Coatings	No (But recommended to maximize reusing and recycling of concrete and minimize waste generation).	Less than 0.5 ppm. --OR-- Sampling not needed because all layers of paints or coatings were manufactured after 1979 or there is documentation that the PCB concentration is less than 0.5 ppm.	Option 1: Concrete can be recycled or reused (concrete sent to the DARCY shall meet acceptance requirements in Chapter 27 of this KNPR). Option 2: Contractor can accept concrete for appropriate recycling or reuse (possible project cost off-set).
		Greater than 0.5 ppm but less than 50 ppm.	Option 1: Dispose of in KSC Landfill. Option 2: Dispose of off-Center through KSC WMO. Option 3: Remove the PCB-containing paint/coating from the concrete and recycle or reuse the concrete. Containerize and dispose of removed paint or coating through KSC WMO.
		Greater than or equal to 50 PPM. --OR-- Paints and coatings were not sampled and assumed to have a PCB concentration greater than or equal to 50 ppm.	Concrete shall be staged or stored according to PCB Bulk Product Waste storage requirements in 40 CFR 761.65(c)(9) until disposed of (e.g., in a container or on a liner that prevents contact with soil and covered from precipitation) Option 1: Dispose of in KSC Landfill. Option 2: Dispose of off-Center through KSC WMO.

Oil Stains Associated with Oil-Filled Electrical or Mechanical Equipment.	<p>No</p> <p>(Recommended to reduce management requirements and disposal costs.)</p> <p>If concrete sampling is performed, it shall be conducted according to EPA Region 1 guidance document entitled "Standard Operating Procedure for Sampling Concrete in the Field." Contact the NASA EAB for a copy of this guidance document.</p>	Less than 0.5 ppm.	<p>Option 1: Dispose of in KSC Landfill.</p> <p>Option 2: Dispose of off-Center through KSC WMO.</p>
		<p>Greater than or equal to 0.5 ppm.</p> <p>--OR--</p> <p>Concrete was not sampled and assumed to have a PCB concentration greater than or equal to 50 ppm.</p>	<p>The concrete may be a regulated PCB spill or remediation waste.</p> <p>Option 1: Remove the stained concrete and dispose of through KSC WMO. Notify the NASA EAB of the removal and the location.</p> <p>Option 2: Sample, delineate the extent of, and dispose of the contaminated concrete according to the requirements in Section 19.6 of this KNPR. Contact the NASA EAB for assistance.</p>

Table A-5: Isolated Paint Chips, Isolated Coating Chips, and Spent Blast Media

Areas With Possible PCBs	Sampling for PCBs Required for Disposal?	PCB Sampling Results	Management, Storage, and Disposal Requirements
NOTE: The guidance below only addresses PCB regulatory requirements. Additional sampling, management, storage, and disposal requirements may apply to these waste streams due to the potential presence of other regulated compounds (e.g., heavy metals). Contact the KSC WMO for additional guidance.			
Paints Coatings	No NOTE: For spent blast media with paints/coatings, PCB sampling and analysis shall be conducted on the paint/coating prior to blasting.	Less than 50 ppm. --OR-- Sampling not needed because all the debris was manufactured after 1979 or there is documentation that the PCB concentrations in all areas are less than 50 ppm.	Option 1: Dispose of off-Center through KSC WMO. Option 2: Dispose of in KSC Landfill.
		Greater than or equal to 50 ppm. --OR-- Sampling not conducted; waste is assumed to have a PCB concentration greater than or equal to 50 ppm.	Waste shall be staged or stored according to PCB Bulk Product Waste storage requirements in 40 CFR 761.65(c)(9) until disposed of (e.g., in a container or on a liner that prevents contact with soil and covered from precipitation). Waste shall be disposed of off-Center through KSC WMO.

19.6 Polychlorinated Biphenyl Spill Cleanup and Remediation

19.6.1 All organizations shall immediately control and report new or ongoing spills and releases of PCB according to the requirements in [Chapter 4](#) of this KNPR.

19.6.2 Organizations shall be responsible for remediating any remaining PCB contamination at a new or ongoing spill site that is beyond the scope or capabilities of the KSC spill response team.

19.6.3 All PCB spill cleanup and remediation activities must be performed IAW TSCA regulations (reference [40 CFR 761.60](#), [40 CFR 761.61](#), [40 CFR 761.65](#), [40 CFR 761.125](#), and [40 CFR 761.130](#)).

19.6.4 Since approval from EPA Region IV and the FDEP may be required before executing any sampling or remediation activities, all PCB remediation activities shall be coordinated with the NASA EAB. The NASA EAB will coordinate with and obtain approvals from EPA and FDEP.

19.6.5 In addition to TSCA regulations, the state of Florida has promulgated soil clean-up standards (soil cleanup target levels [SCTL]) for PCBs. To avoid implementing and maintaining land use controls, PCB spills and releases shall be remediated to the residential SCTL unless otherwise approved by the NASA EAB.

- a. The current residential SCTL is 0.5 mg for each kg.
- b. The current industrial SCTL is 2.6 mg for every kg.

19.6.6 Electrical and mechanical equipment may contain PCB-laden oil now or may have contained PCB-laden oil in the past. There is a possibility that PCB contamination is currently present from historical spills and releases in environmental media (concrete pads, asphalt, soil, sediment, etc.) that currently surrounds (or used to surround) electrical and mechanical equipment. For projects involving the removal of such environmental media, organizations shall evaluate and properly dispose of it according to TSCA regulations.

19.6.7 There is documented existence of PCBs in various building materials (such as paints, coatings, caulk, mastic, adhesives, window glazing, etc.) across KSC and NASA-operated facilities at CCSFS. Organizations shall delineate the extent of and remediate any PCB released to the environment (including soil, concrete, asphalt, sediment, etc.) from those building materials during facility construction or demolition projects.

19.6.8 Organizations disposing of environmental media, spill cleanup wastes, and remediation wastes that potentially contain PCBs shall use the PWQ and TRP process outlined in [Chapter 13](#) of this KNPR for managing and handling the waste streams.

19.6.9 PCB-contaminated environmental media with a PCB concentration less than the state of Florida residential SCTL (currently 0.5 mg per kg) may be disposed of in the KSC Landfill (used as landfill cover material). Otherwise, all PCB-contaminated environmental media and spill cleanup wastes shall be properly stored, labeled, and disposed of off-Center through the KSC WMO.

19.6.10 All environmental media samples must be analyzed using [EPA SW-846 Method 8082A, PCBs by Gas Chromatography](#).

19.6.11 Sampling of concrete must be conducted according to EPA Region I guidance document entitled "Standard Operating Procedure for Sampling Concrete in the Field." Contact the NASA EAB for a copy of this guidance document.

19.7 Health, Safety, and Worker Protection

19.7.1 There is documented existence of PCBs in various paints and coatings (including electrical equipment, mechanical equipment, and structural paint) across KSC and in NASA-operated facilities at CCSFS.

19.7.2 The employer shall assess potential personnel exposures to PCBs and ensure that personnel involved in the removal, disturbance, demolition, management, or cutting of PCB-containing materials (equipment, oils, paints, coatings, etc.) have been briefed on the hazards, provided appropriate PPE, and trained on proper waste management.

19.7.3 Potential PCB hazards and mitigation efforts shall be included in project health and safety plans.

19.7.4 Sampling may be required to confirm the presence or absence of PCBs or to determine the concentration of PCBs in materials in order to minimize worker exposure, ensure proper worker protection, and comply with health and safety and environmental compliance regulations.

19.7.5 Organizations shall consult the KSC Aerospace Medicine and Occupational Health Branch or KSC WMO contractor for guidance on worker protection and environmental health sampling requirements regarding PCBs. Sampling and testing for other regulated compounds (e.g., heavy metals) that can accompany PCBs may also be required.

19.7.6 Organizations shall not directly torch cut or use heat on any materials that contain PCBs as burning of PCBs can create toxic byproducts (such as dioxins).

a. Paint samples must be collected and analyzed for PCBs prior to using heat or torch cutting of materials that could potentially contain PCBs. Heating or torch cutting of materials with PCB concentrations greater than or equal to 50 mg per kg is a regulatory violation and is prohibited without a permit issued by the EPA.

b. Paints and coatings with PCBs shall be removed by physical or mechanical means from areas to be heated or torch cut.

19.8 Sampling Requirements for Painted and Coated Surfaces for Disposal

19.8.1 All organizations shall follow the sampling requirements and guidance below for materials with paints and coatings that may contain PCBs.

19.8.2 The NASA EAB can approve exceptions to these requirements. The organization shall submit the proposed change along with the justification or other information in writing to the NASA EAB Chief for a determination.

19.8.3 TSCA regulations do not explicitly require testing of painted or coated surfaces for PCB while in use. However, improper storage or disposal of painted or coated materials with a PCB concentration greater than or equal to 50 mg per kg is a regulatory violation regardless of whether or not the material has been tested to determine its PCB content.

19.8.4 PCBs have been found in various paints and coatings at KSC and NASA-operated facilities at CCSFS. Each KSC organization shall properly sample, manage, and dispose of painted and coated waste materials that potentially contain PCB.

19.8.5 Sampling and testing for PCB in paints or coating is recommended to maximize recycling and minimize waste disposal (especially metals and concrete). Sampling and testing for PCB can also reduce storage requirements, disposal costs, and worker protection requirements.

19.8.6 There are no established industry standards and methods for the collection of paint samples that potentially contain PCB, therefore, the following applies:

- a. Paint samples shall be obtained IAW the cold-scraping method described in [American Society for Testing and Materials E1729-05, Standard Practice for Field Collection of Dried Paint Samples for Lead Determination by Atomic Spectrometry Techniques](#). However, the heat gun method described in this standard is not approved for the collection of the paint or coatings.
- b. If the laboratory requires at least 30 grams of paint or coating to run [EPA SW-846 Method 8082](#), a composite sample can be produced from multiple painted locations to achieve the 30 gram requirement.
- c. Photographs of the individual sample locations making up the composite sample and the sample identification number must be documented in the project file and be submitted to the KSC WMO during the PWQ and TRP process.

19.8.7 Representative samples of the paints and coatings must be collected and analyzed to determine PCB concentrations.

- a. All layers of paints and coatings at each sampling location must be included in the sample.
 - b. For large, continuous, homogeneous areas (such as a painted wall or coated concrete floor) multiple samples are required due to potential variations in PCB concentrations from one location to another.
- (1) Homogeneous areas are defined as painted or coated areas that are similar in color, function, and form. Sample locations will be randomly selected to cover the entire area.
 - (2) Table A-6 defines the minimum required number of paint or coating samples based on the area square footage.

Table A-6: Paint or Coating Samples Recommendations

SURFACE AREA (SQUARE FEET)	MINIMUM NUMBER OF PCB SAMPLES
less than 500	1
500 to 1000	3
1000 to 5,000	5
5,000 to 10,000	7
greater than 10,000	9

- (1) After the initial round of sampling, it may be desirable to collect additional paint and coating samples to delineate areas where PCB concentrations were greater than or equal to 50 mg per kg. If feasible, it may be beneficial to segregate and manage material from areas above 50 mg per kg separately from areas below 50 mg per kg.

c. For individual pieces of equipment and small building materials, one paint or coating sample is enough to determine the PCB content. If multiple pieces of equipment or building materials (e.g., doors) contain the same paint or coating, one PCB sample can represent all the items.

19.8.8 If paint or coating samples are not collected and no information exists which documents that the paint or coating does not contain PCBs, generators shall assume that the PCB concentrations in the paint are greater than or equal to 50 mg per kg and manage the material as a regulated PCB waste as required by [40 CFR 761](#).

19.8.9 If there is adequate documentation that the paint or coating does not contain any PCBs or that the concentration is less than 50 mg per kg (e.g., proof that all layers of paints or coatings were manufactured after 1979, SDS, etc.), sampling and testing for PCBs does not need to be conducted. The documentation shall be maintained in the project file and submitted to the KSC WMO during the PWQ and TRP process.

19.8.10 Additional paint or coating sampling and testing for other regulated compounds (e.g., heavy metals) may be required depending on the planned disposition of waste. KSC WMO will advise, request, and require the needed sampling in order to process the PWQ and issue the TRP for waste disposal.

19.8.11 Additional paint or coating sampling and testing may be required for industrial health and worker protection requirements. Consult [KNPR 1840.19](#) and contact the KSC Aerospace Medicine and Occupational Health Branch for additional guidance.

19.9 Inspections and Recordkeeping

19.9.1 The NASA EAB shall implement an inspection program for PCB management and inspect facility projects involving PCB wastes and PCB storage areas (including the KSC PCB waste storage facility [K7-0115]) for compliance with regulations and requirements identified in this chapter.

19.9.2 When compliance concerns are identified, the operational organization shall be responsible for corrective action.

19.9.3 By July 1 of each year, the KSC WMO shall prepare the annual document log as described in [40 CFR 761](#). The annual document log documents all PCB waste management activities of the previous calendar year.

CHAPTER 20. RADIOACTIVE MATERIALS

20.1 Applicable Documents

The basic principles are documented in [KNPD 1150.24](#), [KNPD 1860.1](#), [KNPR 1860.1](#), and [KNPR 1860.2](#). Reference the most current version of [KNPD 1860.1](#) for more detailed instruction concerning authorities, definition, responsibilities, general provisions, applicable documents, the summations, implementation, and functions.

20.2 Kennedy Space Center Radiation Protection Program

[KNPD 1860.1](#) describes the policy for handling of radioactive materials at KSC. This KNPD documents ionizing and non-ionizing radiation protection program policy and responsibilities to ensure conformance with referenced regulatory agency requirements for licensing, possession, and use of radiation sources for the KSC. This KNPD applies to all KSC organizational elements, facilities, geographical areas, and operations under KSC jurisdiction or direction, including civilian and military personnel, prime and subcontractor organizations, tenants, principal investigators, and visitors.

CHAPTER 21. ENVIRONMENTAL NOISE

21.1 Regulatory Requirements

[Under the Noise Control Act of 1972](#), the state and local governments have primary regulatory authority that Federal facilities shall honor. Florida statute directs the FDEP to “establish standards for the abatement of excessive and unnecessary noise.” The CAA establishes an EPA Office of Air, Noise, and Radiation. Under the CAA, the EPA may require any Federal facility to control noise deemed to be a public nuisance.

21.2 Responsibility

The noise generating organization is responsible for ensuring compliance with the regulations. The NASA EMB shall assist KSC organizations in determining the appropriate actions to control noise and notify the responsible organization of any public complaint associated with operational noise, including those that may affect wildlife.

21.3 Monitoring

21.3.1 Monitoring of noise due to public complaint or regulatory intervention shall be performed by the KSC Aerospace Medicine and Occupational Health Branch.

21.3.2 Occupational Health shall submit the monitoring report to the appropriate Organizational Representatives (OR) and the NASA EMB.

21.3.3 NASA EMB shall maintain copies of the monitoring reports.

CHAPTER 22. REMEDIATION ACTIVITIES

22.1 Regulatory Requirements

22.1.1 KSC has a Hazardous and Solid Waste Amendment permit that mandates the investigation of any releases of hazardous waste or hazardous constituents at the facility regardless of the time at which the waste was released. KSC is also required to take appropriate corrective action for any such releases.

22.1.2 The permit requires the facility to comply with all LDRs.

22.1.3 The investigation and cleanup of KSC's contaminated sites is performed with guidance and direction from the [EPA Region 4](#) and the FDEP.

22.2 Modifications to Operational Solid Waste Management Units

22.2.1 Modifications to facilities located at, on, or in any SWMU require notification to and approval by the FDEP prior to the implementation of the modification.

22.2.2 Organizations and contractors shall use [KSC Form 21-608](#) to identify facility modification plans to the NASA EAB.

22.2.3 The NASA EAB shall coordinate the modification plans with the FDEP.

22.3 Remediation of Solid Waste Management Units

22.3.1 The NASA EAB shall:

- a. Maintain a schedule, IAW the permit, to investigate and clean up SWMUs and suspected PRLs.
- b. Manage and coordinate with the FDEP the performance of confirmatory sampling, RCRA facility investigations, interim measures, corrective measures studies, and selected remedies for all sites.
- c. Keep the results of work plans, studies, and decisions in an administrative file in the NASA EAB.

22.4 Controls

22.4.1 Organizations and contractors that are involved in the handling of hazardous waste or materials shall:

- a. Ensure that their activities are conducted in a manner that prevents the uncontrolled release of these wastes or materials into the environment.
- b. In the event of a release, take steps to immediately clean up the release and limit the area impacted by the release. The organization causing the release shall notify the NASA EAB at the time of the release IAW the procedures described in [Chapter 4](#) of this KNPR.

22.4.2 If OR discover contamination, or if the NASA EAB informs them that there is contamination at their facilities, the OR shall:

- a. Review all ongoing procedures to ensure that current operations are not causing or adding to the contamination.
- b. Take measures to eliminate the sources of any releases.
- c. Provide corrective measures to the NASA EAB within 30 days of being notified of the discovery of contamination.

22.4.3 The NASA EAB shall:

- a. Review the corrective measures documentation to determine if the corrective actions are appropriate and provide comments, if required.
- b. Maintain responsibility for the overall investigation of suspected and contaminated sites and the management of corrective actions. Using the KSC EC ([KDP-P-1727](#)) process, the NASA EAB shall issue guidance on the requirement for operations and training at active SWMUs.
- c. Manage the identification and reporting of contaminated sites to the regulatory agencies, identify a Potential Responsible Party and develop funding through Environmental Compliance and Restoration budget for the management of cleanups at sites not covered by a Potential Responsible Party.

22.5 Training

Personnel involved in the investigation or remediation of an SWMU shall have the training outlined in [29 CFR 1910, Subpart Z](#) and [40 CFR 264–265](#).

CHAPTER 23. EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT

23.1 The Emergency Planning and Community Right-to-Know Act

23.1.1 [EPCRA](#) Title III, of the Superfund Amendments and Reauthorization Act of 1986, requires reporting of the amount and location of hazardous chemicals produced, stored, used, or released to the environment each year in the U.S.

23.1.2 [EPCRA](#) is divided into three sections:

- a. Subtitle A - emergency planning and notification of hazardous materials (Sections 301 through 304)
- b. Subtitle B - reporting requirements for chemical inventories and releases (Section 311 through 313)
- c. Subtitle C - general provisions dealing with trade secret protection, public access to records, and penalties for noncompliance (Sections 321–330)

23.2 Reporting Requirements

23.2.1 The following sections of [EPCRA](#) require reports to be submitted to the SERC or other regulatory entities. All reports filed by KSC shall be submitted through the NASA EMB.

23.2.2 [Section 302](#) is a one-time reporting requirement. Any organization that has an EHS present at KSC in amounts greater than or equal to the Toxic Release Inventory (TRI) TPQ of the substance shall notify the NASA EMB. A list of EHS and their respective TPQ is available in [40 CFR 300](#) and [40 CFR 355](#).

- a. To determine whether a contractor has an EHS that meets or exceeds the TPQ, the contractor shall calculate the total amount of the EHS present at any one time at the facility, regardless of location, duration, number of containers, or methods of storage. The SERC defines all areas of KSC, including NASA-controlled areas at CCSFS, as one facility.
- b. To determine if the EHS meets or exceeds the TPQ, all sources of EHS, both pure forms and in mixtures at a level greater than or equal to one percent, will be added together and the total amount compared to the TPQ. The unit of the TPQ is pounds.
- c. If the amount is equal to or greater than the TPQ, it must be reported under [Section 302](#).
- d. If the EHS is present in a solution or mixture in an amount less than one percent (de minimis), it does not have to be added to the total amount for determination of exceedance of the TPQ and is exempt from reporting.
- e. If a total amount of an EHS is present at less than the TPQ, it is exempt from the [Section 302](#) reporting requirements.
- f. The NASA EMB shall notify the SERC as appropriate.

23.2.3 [Section 303](#) is a one-time notification to the SERC of an emergency contact at the facility. At KSC, the Chief of the NASA EMB is the emergency contact.

23.2.4 IAW [Section 304](#), all releases of chemicals listed as EHS or CERCLA hazardous substances shall be reported to Federal and state authorities. These lists are available in the appendices of [40 CFR 355](#) and table 302.4 of [40 CFR 302](#).

23.2.5 According to [Section 311](#), government agencies shall submit SDS or a list of certain chemicals present within their facilities to the SERC.

a. Chemicals and thresholds covered by this Section are:

- (1) Any of the EHS that meet or exceed the TPQ or 500 pounds, whichever is less.
- (2) Any of the hazardous chemicals that meet or exceed 10,000 pounds for which OSHA requires an SDS to be maintained. (In both cases, the amount is the total amount that is present either in a pure form or in a mixture on any one day. It is not a cumulative amount.).
- (3) Lists of EHS and their TPQ are given in Appendices of [40 CFR 355](#).

b. No list of OSHA regulated chemicals exists. Chemicals are ranked by OSHA as 1 of 9 physical hazards or 1 of 15 health hazards ([29 CFR 1910.1200](#)). An SDS form shall list the hazards associated with the substance. In general, if a material has an SDS, it is an OSHA-regulated substance.

c. While [40 CFR 355](#) calls for an SDS for each chemical meeting reporting requirements IAW [Section 311](#) to be submitted to the state committees, the Florida SERC prefers facilities submit a list of chemicals instead of the SDS. Chemicals on the list shall be grouped by the five EPA physical and health hazard categories:

- (1) Fire hazard.
- (2) Sudden release of pressure hazard.
- (3) Reactive hazard.
- (4) Immediate (acute) health hazard.
- (5) Delayed (chronic) health hazard.

d. A chemical can fit more than one hazard category and all applicable categories must be noted on the report list. The OSHA hazard groupings noted on SDS must be converted to the five EPA categories.

e. Each contractor shall determine which chemicals used, stored, or processed by the contractor meet reporting requirements under [Section 311](#). Guidelines and formulas for calculating chemical quantities are given in that Section.

f. Concentrations shall be listed on the SDS for the hazardous chemical. If the concentration is not listed, the person reporting is not required to search any further for the value and can assume the value is less than one percent (or 0.1 percent in the case of a carcinogen). The chemical is not required to be added to the total amount for comparing to the TPQ.

g. Reporting under [Section 311](#) is a one-time requirement. When a chemical meets the requirements for reporting, then the SERC shall be notified within 90 days.

23.2.6 [Section 312](#) requires the chemicals covered by [Section 311](#) and their location be reported to the SERC on an annual basis ([Tier II report](#)). The [Tier II report](#) is due to the SERC, the LEPC, and the KSC Fire Department via KSC Emergency Management Officer by March 1 for the previous calendar year.

a. The NASA EMB shall submit the [Tier II report](#) to the SERC, the LEPC, and the KSC Emergency Management Officer.

b. All KSC operations and contractors at KSC shall annually report the amounts of covered chemicals for which OSHA requires an SDS to the EMB.

23.2.7 [Section 313](#), [TRI](#), applies to all Federal facilities associated with the manufacture, processing, or other use of a listed toxic chemical in amounts that meet or exceed the TPQ.

a. [A TRI form \(Form R or Form A\)](#) must be filed for each chemical present above the threshold level.

(1) The threshold level for manufacturing, importing, or processing any listed chemical is 25,000 pounds a year.

(2) The threshold for other use (which includes cleaning) is 10,000 pounds a year.

b. KSC operations and contractors shall report all quantities of covered chemicals to the NASA EMB.

c. The NASA EMB shall submit [TRI forms](#) to the SERC and to the EPA by July 1 for the previous calendar year.

CHAPTER 24. NATURAL RESOURCES

24.1 Protected Wildlife Species

24.1.1 Federal Regulatory Requirements

- a. [Section 7 of the ESA](#) requires all Federal agencies to consult with the [U.S. FWS](#) on all actions that may affect a threatened or endangered species or their habitats.
- b. The rules and requirements for these consultations are delineated in [50 CFR 402](#), which identifies the type of consultation required (e.g., formal, early, informal), parties involved, and timing.
- c. The most current list of threatened and endangered species can be found at the [FWS Endangered Species Web site](#).
- d. Under the provisions of the ESA, it is the duty of NASA and all Federal agencies to protect and enhance these species and their habitats. Therefore, prior to taking any actions on KSC, potential impacts to all natural resources shall be considered.

24.1.2 KSC Implementation

- a. NASA KSC and the DOI FWS have an Interagency Agreement (KCA-1649) for the use and management of property on KSC and known as the MINWR. As part of that responsibility, MINWR has developed a [Comprehensive Conservation Plan \(August 2008\)](#) which outlines strategies to ensure land management actions are compliant with ESA, NPR, KNPR, and DOI requirements.
- b. [Section 24.1.5](#) of this Chapter defines the procedural direction unique to KSC that was developed to ensure that KSC is compliant with all Federal and state regulatory requirements for natural resources.
- c. KSC is home to many protected species as described in [KSC-PLN-1911](#).
- d. When the response to the KSC EC ([KSC Form 21-608](#)) [KDP-P-1727](#)) or REC indicates that a project may impact any protected species (Federal or state listed), a biological survey shall be completed by NASA KSC EMB. If an unavoidable impact or one that cannot be mitigated is identified for a federally protected species, then a formal consultation with the FWS shall be conducted by the EMB.
- e. NASA's policy and commitment to excellence in stewardship is defined in [14 CFR 5 1216.102](#). All species shall be treated as protected unless otherwise directed by the NASA EMB. Questions regarding the level of protection required for any species on KSC are to be directed to EMB. NASA KSC has several requirements to cover compliance actions needed to address impacts to protected species; they are included below.
- f. For all other species and habitats for which a KSC plan does not exist, KSC shall confer directly with the regulatory agency having authority.

24.1.3 Gopher Tortoise Requirements

The gopher tortoise (*Gopherus polyphemus*) is listed as a threatened species by the [State of Florida Fish and Wildlife Conservation Commission under Chapter 68A-27.003](#), FAC, and is pending Federal protection status. The KSC/MINWR requirements for actions that may affect gopher tortoises or their habitats must be followed. All work is conducted under the direction of the U.S. FWS/MINWR through EMB; no additional state permits are required.

a. All projects (whether maintenance, demolition, or new construction) that might directly or indirectly impact gopher tortoises will be identified through the KSC EC ([KSC Form 21-608](#)) ([KDP-P-1727](#)) process and/or the Excavation Permit Request review. The proponent shall ensure proper evaluation of the action and coordination with the EMB prior to the start of work.

(1) Prior to the beginning of any activity with potential to impact tortoises or their habitat, the project proponent shall ensure a biological survey of the project area is conducted. Surveys can be conducted by the EMB contractor or an outside contractor. If an outside contractor is used, all methodology and procedures must have prior EMB approval.

(2) If gopher tortoise burrows are found in the path of work, modifying the work plan to avoid impacts is the most favorable option, not only for the tortoises, but also for many other species of wildlife that are known to use gopher tortoise burrows.

(3) If burrow impacts are unavoidable, EMB and its contractor (or other authorized personnel) shall be responsible for determining the presence or absence of tortoises within burrows to be impacted. If necessary, tortoises will be captured and held until they can be safely returned to the project site, or in circumstances where there is a permanent loss of the habitat, they are relocated to an EMB-approved location.

b. The EMB contractor will provide guidance on tortoise awareness during construction. This includes instituting measures to exclude tortoises from the area for the duration of the project via fencing and vigilance by the workers onsite to report any tortoise observations to EMB. Handling of the tortoise by anyone other than authorized personnel is prohibited.

24.1.4 Osprey Nest Requirements

The osprey (*Pandion haliaetus*) is a federally listed species under the [Migratory Bird Treaty Act \(16 U.S.C. 703-712\)](#) and is protected under state law under [Chapter 379, F.S.](#), and [FAC 68A-27](#), in coordination with the FWS, has developed requirements to guide actions in circumstances when an osprey nest may be impacted by KSC operations.

a. All projects, whether maintenance, demolition, or new construction, that might directly or indirectly impact osprey nests will be identified through the KSC EC ([KSC Form 21-608](#)) ([KDP-P-1727](#)) process and/or the Excavation Permit Request review. The project proponent shall ensure proper evaluation of the action and coordination with EMB prior to the start of work.

b. Activities should always be conducted outside of the nesting season (generally February 1st through July 1st) except in emergency situations. Requests for work during the nesting season that would potentially impact a nest must be accompanied by justification for the project timing. EMB will then coordinate with the FWS MINWR and its authorized agent to conduct a biological survey of the nest site. A decision will be made by the MINWR agent as to whether or not the intended activity will be permitted.

- (1) If a nest will be impacted and is determined to be inactive (does not contain eggs or young), it may only be removed (i.e., destroyed) by MINWR personnel or the EMB authorized agent or under the direction of either.
- (2) If the project results in the destruction of the nesting site or will make the site unusable, then the construction of a replacement nesting platform is required. The platform must be comparable to or of a better quality than the original nest site and be installed by the contractor performing the work. The replacement nest structure should be located as close to the original nest site as possible, as agreed upon by EMB and MINWR. Nesting platform specifications are available from EMB upon request.

24.1.5 Rooftop Nesting Bird Requirements

With the loss and degradation of natural colony sites, the least tern (*Sterna antillarum*) and black skimmer (*Rynchops niger*) have adapted to nesting on gravel rooftops. Both species are federally protected under the [Migratory Bird Treaty Act \(16 U.S.C. 703-712\)](#) and listed as Threatened by the state of Florida. The project proponent shall ensure compliance with KSC requirements for nesting least terns and black skimmers potentially impacted by activities requiring roof access.

- a. Access to roof tops with active nesting shall not be authorized except for safety or maintenance emergencies during the nesting season (March through July) without approval from EMB. Human disturbances can cause chicks to run off the edges of the roof and adults to fly, leaving eggs and chicks exposed to predators. Repeated intrusion may cause a colony to be abandoned. Active colonies will be posted with signs that include contact information should an emergency arise.
- b. If access to a roof with an active nesting colony is necessary, disturbance to the birds shall be minimized. An EMB contractor biologist shall be consulted and shall accompany the workers onto the roof. The number of persons accessing the roof and the duration of the visit should be kept to a minimum.
- c. Another potential source of disturbance is from low-flying aircraft or drones above the roof. If a roof is identified as a nesting site, the KSC Flight Operations supervisor will be asked to notify all pilots and drone operators to avoid the area until the end of the nesting season. Additional information about these nesting rooftop birds can be provided by NASA EMB upon request.

24.1.6 Exterior Lighting Requirements

24.1.6.1 The purpose of this section is to provide clear guidance to facility managers (FM) and/or PMs responsible for exterior lighting requirements and to demonstrate compliance with the federal regulations referenced below and [KSC-PLN-1210](#). The NEPA of 1969, as amended (42 U.S.C. 4321-4347), and according to the procedures of implementation 14 CFR 1216, subpart 1216.3 requires Federal agencies to assess how programs and associated actions may affect the environment.

KSC is required to protect marine turtle nesting habitat by NEPA and the FWS through the ESA. KSC has coordinated with FWS on the effects of exterior lighting on protected species, and FWS issued the [Sea Turtle Biological Opinion \(BO\) \(FWS Log No. 04EF1000-2016-F-0083\)](#) detailing historical and anticipated future light management activities by KSC and the associated effects on the following sea turtles:

- a. Loggerhead (*Caretta caretta*)
- b. Green (*Chelonia mydas*)
- c. Leatherback (*Dermochelys coriacea*)
- d. Hawksbill (*Eretmochelys imbricata*)
- e. Kemp's ridley (*Lepidochelys kempii*)

24.1.6.2 This Exterior Lighting Requirement is a mandatory component of the [Sea Turtle BO](#). Currently, hatchling or adult sea turtle disorientation rates shall not exceed three percent as described in the [Sea Turtle BO](#). If that occurs, FWS requires that NASA KSC reinstate consultation, and FWS will review the reasonable and prudent measures that KSC has taken to remedy the situation. Any changes that result from the consultation must be incorporated into this requirement and affect all existing and future projects.

24.1.6.3 Lighting Design Requirements

[KSC-PLN-1210](#) ensures appropriate lighting is available for nighttime operations at KSC, while also minimizing the impact on protected species, and also detailing measures implemented to ensure compliance with Federal regulations. The development and implementation of [KSC-PLN-1210](#) is intended to support NASA KSC's compliance with the [Sea Turtle BO](#) issued by the FWS. Therefore, FM/PMs shall ensure compliance with the requirements defined below:

a. Light Fixture Design

- (1) The project design shall include lamp type, wattage, installation height, orientation, and operational procedures.
- (2) If required, the Lighting Operations Manual (LOM) must identify locations of all exterior lighting fixtures and interior fixtures visible from the outside, facility lighting controls, proposed operation schedule, and procedures for ensuring proper light use IAW with [KSC-PLN-1210](#).

b. Light Fixture Operations

- (1) KSC prohibits the use of facility exterior lighting between 9:00 p.m. and dawn except where essential to support facility and personnel safety/security activities.
- (2) These activities include: space launch-related activities at launch complexes and/or processing facilities with essential operations occurring during hours of darkness with specific lighting requirements. Operation of existing lighting at facilities currently not covered by a LOM and not meeting the current design criteria below must apply for a waiver.

c. Light Fixture Criteria

- (1) Lighting using lamps with long wavelengths (560 nanometers [nm] or greater) and lowest wattage possible shall be used for all exterior lighting applications.
- (2) Low-pressure sodium and red, amber, or orange light emitting diode (LED) lamps meet this criteria.
- (3) Lighting with wavelengths less than 560nm, including but not limited to phosphor-converted amber LED, metal halide, and mercury vapor lamps, are not authorized for use in exterior lighting applications.
- (4) In cases where there are specific requirements calling for the discernment of colors, the justification will be addressed in the LOM or, for smaller projects, the PM may apply for a waiver.

d. Energy Conservation: KSC energy conservation standards are to be incorporated into all lighting designs.

e. Lighting Installation Guidelines

- (1) The point source of light shall not be visible from the beach.
 - (2) Light fixtures will be mounted as low as possible, directed at the target of illumination, and will not be visible from the beach. Maximum mounting height of light fixtures is 20 feet above grade at facilities/infrastructure visible from the beach. Maximum mounting height of luminaires is 25 feet above grade at all other facilities/infrastructure locations.
 - (3) All light fixtures will be full cut-off fixtures, shielded and/or recessed or equivalent.
 - (4) Photocells will only be used to support security or other mission-specific requirements that occur on a regular schedule each night. Parking lots will not use photocells unless used in conjunction with programmable timers and/or manual switching. Timers and remote switching can also be used for lighting operation at locations where personnel are not readily available to manually extinguish lights. Where unplanned security monitoring is required, motion detector switches programmed to turn lights on for the minimum duration practicable will be used.
- f. Portable task lighting rather than permanent light fixtures will be used for temporary operational activities. Task lighting must conform to the same restrictions as permanent lighting and must have the capability to be turned off immediately following work completion.
- g. Exceptions to these design guidelines will be evaluated by the NASA EMB on a case-by-case basis through the variance process. If approved, a waiver will be issued.

24.1.6.4 Lighting Implementation

a. All projects that include installing, upgrading, or retrofitting exterior lighting or lighting that is visible from outside the building shall be evaluated through submittal of an EC and review by the KSC EC ([KSC Form 21-608](#)) ([KDP-P-1727](#)) process. The checklist will be submitted by either the project proponent, design engineer, PM, or other responsible entity.

- b. Within seven days of submittal of the checklist, the PM will receive either a request for further information or a REC from EMB.
- c. At a minimum, new facilities, major modifications, and existing and proposed launch complexes will require a LOM. Other activities that may require a LOM will be identified through the KSC EC [\(KSC Form 21-608\)](#) [\(KDP-P-1727\)](#) process.
 - (1) The FM/PM will be responsible for the development of a LOM that meets the criteria described in the LOM template provided in the [KSC-PLN-1210](#), Appendix A. The EMB will have a subject matter expert available to assist the FM/PM with the plan.
 - (2) The PM will submit the proposed LOM to EMB for review and comment.
 - (3) Once reviewed and accepted by both EMB and U.S. FWS, a memorandum of acceptance will be generated by the EMB and sent to the FM/PM.
 - (4) The final approved LOM will be cataloged by the EMB and the FM/PM will retain a copy for future reference.
- d. If EMB determines that the LOM is in compliance, no further action will be required.
- e. If EMB determines that the LOM does not meet the requirements then a waiver/variance will be required as follows:
 - (1) In these cases, the discrepancy shall be identified in the waiver request which includes a justification, with a focus on the specific lighting requirements needed to conduct the project.
 - (2) Notification of approval and acceptance of the variance will be sent to the FM/PM by the EMB.
 - (3) The final approved waiver shall be cataloged by the EMB and the FM/PM shall retain a copy for future reference.
 - (4) Any modifications to the project site/structure(s) that result in exterior lighting changes must go through the process again, as outlined above.

24.1.6.5 Compliance Coordination

- a. Once every two years, the appropriate personnel, including, but not limited to, engineers, facility managers, and any other representatives that design and/or enforce lighting at KSC, will attend a FWS-approved sea turtle lighting workshop.
- b. These same personnel will allow EMB and/or agents of EMB to post educational data and notices related to sea turtle nesting season at their facilities.
- c. At a minimum, all facilities using a LOM will be inspected annually by EMB or their agents. The EMB is required to conduct periodic compliance inspections of facility light operation and report all findings to FWS on an annual basis.

d. LOM template is available in [KSC-PLN-1210](#), Appendix A. The LOM is a KSC plan with a specific format that must be followed. A draft LOM shall be submitted to NASA EMB for review and approval. Once approved, EMB will forward to FWS for final review and approval. NASA EMB staff are available to support preparation of this document.

24.1.7 Florida Scrub-Jay Requirements

a. Issued on November 6, 2013, the FWS [Florida Scrub-Jay Biological Opinion \(KHB-0194 ScrubJay\)](#) for KSC is based on [KHB-0194.1, KSC Florida Scrub-Jay Compensation Plan](#) and allows for streamlined review, assessment, and mitigation determinations for projects that will result in impacts to the Florida Scrub-Jay or its habitat.

b. The review process has been delegated to NASA EMB and MINWR with annual oversight from FWS. Project proponents shall initiate consultation with NASA EMB when a project will result in impacts. The project REC will indicate if impacts to Florida Scrub-Jay habitat are anticipated and will provide current NASA EMB contact information.

24.2 Coastal Zone Consistency Determination

24.2.1 By law, all states shall develop and implement coastal zone management programs. The [Coastal Zone Management Act](#) also requires all Federally conducted or supported activities be consistent with the state program in which they are undertaken.

24.2.2 All Federal agencies performing or approving work in the coastal zone of any state shall:

- a. Determine if their activities directly affect the coastal zone of that state.
- b. Provide the state with the determination if activities directly affect the coastal zone, at least 90 days prior to the final approval of implementation of the activity in order to allow the state respond accordingly.

24.2.3 The Florida Coastal Zone Management Plan indicates that the entire State of Florida is within the coastal zone but that KSC is considered outside the coastal zone. The following requirements are still in effect:

- a. KSC projects are not exempt from the regulatory requirement of determining consistency with the Florida Coastal Zone Management Plan.
- b. Each project and activity shall be reviewed to determine if the action affects areas outside KSC.
- c. If the project affects the coastal zone, a consistency determination will be prepared and submitted to the state by the NASA EMB.
- d. The determinations are typically included in the EIS or EIS for the proposed project ([KDP-P-1726](#)).

24.3 Wetlands and Floodplains

24.3.1 Background

- a. The Federal Government regulates work in wetlands and waters of the U.S. through the authority of the U.S. Army Corps of Engineers (USACE) IAW [33 USC 403](#), [33 USC 401](#), and [33 USC 1344](#).
- b. The State of Florida regulates work in, on, or over wetlands or surface waters within the state through [Chapter 403 FS](#), [FAC 40C-4](#), and [FAC 62](#).
- c. [EO 11988](#), [EO 11990](#), and the CWA direct Federal facilities to avoid impact to floodplains and wetlands, whenever practicable, and to develop procedures for protection of floodplains and wetlands.

24.3.2 ERP for Wetlands and Surface Waters

- a. The ERP Program regulates activities that would affect wetlands, alter surface water flows, or contribute to water pollution. The wetlands portion of the ERP Program regulates activities involving any work in, on, under, or over wetlands or surface waters. This includes any activities that have direct, secondary, and/or cumulative impacts to these resources. For KSC, these regulations often require demonstration that all wetland permitting criteria, such as avoidance and minimization of impacts and mitigation to offset any unavoidable impacts, has been met. ERP Permitting encompasses both the stormwater and wetland review criteria in a single permit. Issuance of this permit (with Water Quality and Coastal Zone Management Certification) is a pre-requisite to meeting Federal CWA review criteria discussed in [Section 24.3.3](#) below.
- b. The ERP Program is administered by both the SJRWMD and the FDEP. These two agencies are responsible for reviewing wetlands, surface waters, and stormwater system designs and issuing permits authorizing their construction and operation. Authorization is required from either SJRWMD or FDEP; project type will indicate which agency will review the permit application.
- c. The SJRWMD stormwater rules and ERP permitting procedures are located on the [SJRWMD Permitting Web site](#). The SJRWMD's [Management and Storage of Surface Waters Handbook](#) can assist in the preparation of ERP permit applications. Organizations and contractors shall refer to and use these Web sites, rules, and handbooks when preparing ERP stormwater permit applications.
- d. The USACE rules and permitting procedures are located on the [USACE Web site](#). Within the regulatory section of this Web site is a source book available for assistance in preparing applications and understanding rules and procedures. Organizations and contractors shall refer to and use this when preparing federal environmental permit applications.

24.3.3 Activities that may require an ERP or Federal environmental permit:

- a. Any project that involves work in, on, or over wetlands or surface waters may require an environmental permit.

b. Organizations and contractors shall immediately notify the NASA EMB regarding any new planned project or activity identified in [Chapter 24.3.1](#). This notification is typically accomplished through the KSC EC ([KSC Form 21-608](#)) ([KDP-P-1727](#)) process outlined in [Chapter 3](#) of this KNPR.

c. The NASA EMB shall evaluate the proposed project or activity and determine whether an environmental permit is required. Some projects may not require a permit if they are below certain permitting thresholds.

24.3.4 Obtaining an ERP or USACE permit:

a. If a project requires an ERP or permit, the initiating organization or contractor shall prepare the application package, which includes [Application Form 62-330.060\(1\)](#) and all required supporting documentation.

b. The initiating organization or contractor shall refer to the appropriate rules and use the applicant handbooks on the [SJRWMD Permitting Web site](#) and the [USACE Web site](#) when preparing the permit application.

c. Organizations and contractors shall include the NASA EMB in design reviews or other meetings for projects or activities involving ERP or USACE permitting.

d. The initiating organization or contractor shall submit the draft application package to the NASA EAB and EMB for review and comment.

e. The NASA EMB and EAB shall review the draft application package and provide comments to the initiating organization or contractor.

f. The initiating organization or contractor shall deliver one hard copy and one electronic copy of the final application package to the NASA EMB and EAB.

g. Documents and drawings requiring PE certification will be signed and sealed.

h. The NASA EAB shall sign the applications packages as the Applicant and submit them to the appropriate agency (SJRWMD, FDEP, and/or USACE).

i. The agency will review the permit application for completeness and accuracy within 30 days. If not satisfied with the permit application, the agency will submit an RAI to the applicant to correct any deficiencies, errors, or omissions. Multiple RAIs may be submitted to the applicant until the agency deems the application package to be complete.

j. The initiating organization or contractor shall prepare draft RAI responses (in coordination with the PE) and submit them to the NASA EMB and EAB for review and comment.

k. The NASA EMB and EAB shall submit the final RAI responses to the agency.

I. When the permit application is approved, the agency will issue and mail the permit to the NASA EAB. The NASA EAB shall forward the permit to the initiating organization or contractor. Projects involving ERP stormwater permits are typically issued within 30 days after the application package is determined to be complete. Projects requiring individual ERP stormwater permits require approval from a governing board and are typically issued within 120 days after the application package is determined to be complete.

24.3.5 Project execution involving an ERP Stormwater Permit

a. The initiating organization or contractor is responsible for ensuring that the design information submitted in the ERP permit application (and any subsequent submittals or RAIs) is equivalent to the design information in the final design package, support request, or construction contract. The permit and permit conditions shall also be included in the support request or construction contract.

b. The initiating organization or contractor shall not begin construction prior to receiving the ERP and/or USACE permits.

c. Prior to the start of site work, the initiating organization or contractor shall submit an [Construction Commencement Notice Form 62-330.350\(1\)](#), Construction Commencement Notice, to the NASA EMB and EAB at least five days before the start of construction.

d. The NASA EAB shall sign the form as the Permittee and submit it to the SJRWMD at least two days before the start of construction. The NASA EMB will submit a Construction Commencement Letter to the USACE IAW the USACE guidance.

e. The initiating organization or contractor is responsible for ensuring that the entity performing the work abides by all rules and permit conditions. The initiating organization or contractor shall periodically inspect the project site to ensure compliance with all permit conditions and immediately notify the NASA EMB and EAB and correct the deficiencies, in the event a permit violation is discovered.

24.4 National Aeronautics and Space Administration Use of Areas Managed by the United States Department of the Interior

24.4.1 Of the 140,000 acres of land and water which comprise KSC, less than 10 percent has been developed by NASA. The remainder is managed for NASA IAW KCA-1649 with the FWS as the MINWR, and by the National Park Service (NPS) as a portion of the Canaveral National Seashore.

a. The NASA operational areas include the Industrial Area, Complex 39, the Shuttle Landing Facility, the KSC Visitor Complex, KSC roads, and various other smaller areas.

b. The refuge traces its beginnings to the development of the nation's Space Program. In 1962, NASA acquired 140,000 acres of land, water, and marshes adjacent to Cape Canaveral to establish the John F. Kennedy Space Center. NASA built a launch complex and other space-related facilities, but development of most of the area was not necessary. In 1963, the FWS signed an agreement to establish the refuge and, in 1975, a second agreement established Canaveral National Seashore. Today, the DOI manages most of the unused portions of the KSC as the MINWR and Canaveral National Seashore.

24.4.2 When a project or action is proposed outside a KSC operational area and within the MINWR, a special-use permit from the FWS is required. These permits are usually valid for one year.

24.4.3 If the project is intended to last longer than one year or is permanent, the affected area shall be removed from refuge lands and considered a new or additional KSC operational area. The procedure for withdrawal of refuge land is implemented by the Spaceport Integration and Services Directorate as referenced in the [KDP-P-3235](#).

CHAPTER 25. CULTURAL RESOURCES

25.1 Regulatory Requirements

25.1.1 The [NHPA of 1966](#) is the keystone of Federal historic preservation laws to ensure places of historic value are considered and preserved for listing on the National Register of Historic Places (NRHP). Section 106 of the Act requires Federal agencies to evaluate the effect of all federally funded or permitted projects on historic properties (e.g., buildings/structures and archaeological sites) and to mitigate adverse effects. Section 110 of the Act obligates Federal agencies to establish a historic preservation program for the identification, evaluation, and nomination to the NRHP.

25.1.2 [36 CFR Part 800, Protection of Historic Properties](#), is the Advisory Council on Historic Preservation (ACHP) implementing regulations that require agencies to consult with stakeholders on all Federal undertakings that have the potential to affect historic properties. Consultation for NASA KSC projects is performed between the KSC Cultural Resources Manager (CRM) and stakeholders that may include, but are not limited to, the Florida State Historic Preservation Officer (FL SHPO), the ACHP, Native American Tribes, interested parties, and the public. The consultation process must be completed and any adverse effects mitigated prior to the execution of any Federal undertaking.

25.1.3 Other Federal and state regulatory requirements including executive orders with which NASA KSC must comply are listed below:

- a. [American Indian Religious Freedom Act of 1978](#)
- b. [Archaeological Resources Protection Act of 1979](#)
- c. [Native American Graves Protection and Repatriation Act of 1990](#)
- d. [National Environmental Policy Act of 1969](#)
- e. [EO 11593, Protection and Enhancement of the Cultural Environment](#)
- f. [EO 13007, Indian Sacred Sites of 1996](#)
- g. [EO 13175, Consultation and Coordination with Indian Tribal Governments](#)
- h. [EO 13287, Preserve America](#)
- i. [36 CFR 79, Curation of Federally-owned and Administered Archaeological Collections](#)

25.2 National Aeronautics and Space Administration Requirements and Documentation

25.2.1 [NPR 8510.1](#) implements applicable requirements for the Cultural Resources Management Program; establishes requirements, roles, and responsibilities for Native American consultation; and ensures the responsible stewardship of NASA's cultural resources are IAW The Secretary of the Interior's Standards and Guidelines for Federal Agency Historic Preservation Programs pursuant to the NHPA.

25.2.2 The [KSC-PLN-1733, ICRMP](#) serves as KSC's planning document for managing cultural resources on NASA-owned lands as well as NASA-owned resources located on CCSFS. The ICRMP reflects KSC's commitment to the protection of its significant archaeological sites and historic facilities and structures. The ICRMP is updated every five years.

25.2.3 KCA-4185 is dated May 2009, and streamlines the Section 106 review process; exempts categories of undertakings from the consultation process; eliminates the need to prepare other agreement-type documents on undertakings that will have an adverse effect to a listed or eligible historic building, structure, or district; and establishes when consultation is required, such as for demolition activities.

25.2.4 KSC's Historic Property Listing for built resources is available on the [NASA KSC Environmental Planning Cultural Resources Management Web site](#) or by contacting the KSC CRM. The listing excludes archaeological sites discovered on NASA-owned lands and the National Historic Landmarks (NHL) properties managed by NASA. The KSC Historic Property Listing is updated yearly. The known archaeological sites and their locations are protected from the public IAW the Archaeological Resources Protection Act and Section 304 of the NHPA, but are available for project planning purposes by contacting the KSC CRM.

25.2.5 KSC's Landmark Property Listing is available on the [NASA KSC Environmental Planning Cultural Resources Management Web site](#) or by contacting the KSC CRM.

25.2.6 When an undertaking may adversely affect an NHL, or does not otherwise fall under the KSC Partnership Agreement (KCA-4185), a Memorandum of Agreement (MOA), or other agreement-type document, will be prepared. The MOA or agreement document shall describe the undertaking, adverse effects, and mitigation measures to be taken by all parties. The MOA is signed by the Center Director, FL SHPO, ACHP, the NPS, and other stakeholders, as appropriate.

25.3 Controls

25.3.1 Standard operating procedures (SOP) have been developed that can be found in the KSC ICRMP ([KSC-PLN-1733](#)), Chapter 6, for the identification, evaluation, treatment, and preservation of significant historic properties (including archaeological sites and historic facilities) for KSC. For example, SOP 5 and SOP 6 describe what must occur when unanticipated discoveries of archaeological materials or human remains are uncovered. Work must stop immediately and the PM should contact the [KSC CRM](#) so the findings may be identified and evaluated to determine if additional archaeological survey is required.

25.3.2 [KDP-P-1733](#) is the flow process used to consider the effects on historic properties and when to consult on projects.

25.3.3 [KDP-P-1727](#) must be completed on all projects at KSC, including ground-disturbing activities. The project is reviewed and evaluated for impacts to historic properties and historic areas that will be documented on the KSC REC. The REC will indicate if an adverse effect may result from a project or if a survey is required. The REC will also identify mitigation measures.

25.3.4 No undertaking that may adversely affect a historic property shall be initiated until the Section 106 consultation process is completed between the [KSC CRM](#) and FL SHPO. If a property's historic significance has not been determined, a survey and evaluation will need to be completed and coordinated with the FL SHPO.

25.3.5 No Federal undertaking that may affect a resource significant to Native American Tribes shall be initiated until the appropriate level of consultation has been completed between NASA KSC and the Tribes.

25.4 Mitigation Measures

If an undertaking has an adverse effect to a historic property, after consultation with the FL SHPO, mitigation measures will need to be agreed upon between KSC and the FL SHPO prior to project implementation. Mitigation measures may be in the form of historic recordation, data recovery, Web site development, oral histories, salvage of artifacts, development of reports or pamphlets, etc.

CHAPTER 26. POLLUTION PREVENTION, SOLID WASTE DIVERSION, RECYCLING, AND GREEN PURCHASING

26.1 Regulatory Requirements

26.1.1 [Section 6002 of the RCRA, Solid Waste Disposal Act](#), and the most recent applicable Executive Orders to establish solid waste diversion goals and establish and maintain cost-effective pollution prevention programs.

26.1.2 Reporting

- a. The NASA EMB and other NASA and contractor organizations shall collect data on green purchasing, recycling, and waste diversion practices at KSC throughout the year to support data calls.
- b. All NASA and contractor organizations shall respond to the data calls.
- c. NASA EMB and other NASA and contractor organizations shall input the data into NETS during the annual Green Purchasing, Recycling, and Solid Waste Diversion data call or other data calls.

26.2 Pollution Prevention

26.2.1 KSC's goal is to reduce the volume and toxicity of hazardous solid wastes to the extent economically practicable. All personnel shall adopt this practice in day-to-day operations and are encouraged to introduce new ideas concerning waste minimization opportunities to management.

26.2.2 All NASA and contractor organizations shall contribute to Agency and Center waste diversion goals.

26.2.3 The NASA EMB shall provide guidance and direction to help achieve KSC's goals.

26.2.4 KSC Hazardous Solid Waste Minimization Elements

- a. Management Support - Management of each NASA and contractor organization that generates hazardous solid waste shall show support of waste minimization efforts by using the following techniques:
 - (1) Incorporate waste minimization as an integral part of organizational strategies to increase productivity and quality.
 - (2) Set goals for the reduction of both volume and toxicity of waste streams consistent with those established by the NASA EMB.
 - (3) Commit to implementing recommendations identified through assessments, evaluations, and waste minimization teams.
 - (4) Designate a waste minimization coordinator who is responsible for facilitating effective implementation, monitoring, and evaluation of the program.

(5) Publicize waste minimization success stories and recognize individual and group accomplishments.

(6) Raise employee awareness of the waste generating impact that results from daily operations and work procedures.

b. Characterization of Waste Generation and Waste Management Costs - The KSC environmental support contractor shall track types and amounts of waste generated at KSC and the direct costs associated with waste disposal. True costs affect the economic practicability of waste minimization activities and include:

(1) Additional costs of regulatory compliance oversight.

(2) Reporting requirements.

(3) Cost of labor and materials.

(4) Employee exposure and health care.

(5) Liability insurance.

(6) Possible corrective action costs.

c. Periodic Waste Minimization Assessments - The NASA EMB will assist each waste generating organization in performing process or facility assessments to identify opportunities at all points in a process where materials can be prevented from becoming waste. These waste minimization opportunities shall be analyzed based on true costs associated with management of the waste.

d. Technology Transfer - Useful and valid waste minimization techniques can be shared within waste generating organizations and among other waste generating organizations. Functions at KSC, such as the KSC Environmental Solutions Partnering Team, provide a forum for sharing these technologies and techniques.

e. Project Implementation - If feasible and practicable, recommendations developed through the waste minimization assessments should be implemented.

(1) The NASA EMB will assist the KSC waste generating organizations in monitoring the overall effectiveness of waste minimization activities in relation to waste minimization goals.

(2) The KSC environmental support contractor will help these efforts through distribution of periodic reports on the amount of hazardous waste generated and the associated direct disposal costs.

26.2.5 Waste Minimization Options (in order of preference)

a. Prevention through Source Reduction - Source reduction is the practice of reducing the amount of hazardous substances, pollutants, or contaminants entering any waste stream or otherwise released into the environment before recycling, treatment, or disposal.

Source reduction reduces or eliminates the hazards to employees, the public, and the environment along with the liability of regulatory compliance. Several source reduction techniques are listed below:

- (1) Initial Design - Incorporation of environmental considerations into the initial process or facility design to limit or prevent pollution or waste generation from occurring.
 - (2) Process Efficiency Improvements - Changes to a process or facility to reduce requirements for hazardous substances, pollutants, or contaminants.
 - (3) Material Substitutions - Substitution of non-hazardous or less hazardous materials into a process to reduce the toxicity of the resulting waste stream.
 - (4) Inventory Control - Control of hazardous materials in inventories to promote efficient use and to avoid shelf-life expiration and waste generation. Emphasize issuing only the quantity of a material needed for the job.
 - (5) Preventive Maintenance - Designing equipment for maintainability can result in detection and avoidance of equipment problems before failures and associated spills and leaks of hazardous materials occur.
 - (6) Improved Housekeeping - A clean, well-organized facility and awareness by personnel regarding the proper management and use of toxic and hazardous materials can greatly reduce the frequency and amount of accidental spills, releases, and subsequent waste generation.
- b. Recycling and Waste Diversion - For hazardous substances, pollutants, or contaminants that cannot be reduced at the source, waste diversion practices such as recycling or reuse are the most preferred methods of waste minimization.
- c. Treatment - Any method that physically, chemically or biologically changes the character or composition of the waste; recovers energy or material resources from the waste; renders the waste non-hazardous or less hazardous; reduces the volume of the waste; renders the waste safer for transport, storage, or disposal; or makes the waste amenable for recovery or storage. Treatment opportunities for hazardous wastes at Kennedy may be referenced in TRP instructions (example: neutralization of corrosive wastes). Treatment options should only be employed when wastes cannot be prevented or recycled.
- d. Disposal - Disposal shall only be used when the waste could not be prevented, treated, or recycled.

26.3 Kennedy Space Center Non-Hazardous Solid Waste Diversion and Recycling

26.3.1 The NASA EMB shall enable Center-wide recovery and sale, reuse, or exchange of recyclable materials owned by the Government. The implementation of this program is designed to ensure all employees comply with current sustainability-related Executive Orders.

26.3.2 The NASA EMB shall work closely with the property disposal contracting officers to provide solid waste diversion and recycling requirements when modifying existing contracts and creating requirements for new contracts.

26.3.3 KSC's overall goal is to maximize the amount of materials diverted and recycled while reducing the amount of recyclable material going to our onsite landfill and Brevard County landfill. KSC civil servants and contractors shall maximize the recovery and sale of recyclable material owned by the Government which has no value other than its basic material content.

26.3.4 Recycling Program

a. The NASA EMB administers recycling programs for aluminum and steel cans, plastic and glass bottles, white and colored paper (including newspaper, post-it notes, magazines, catalogs, notepads, spiral bound notebooks, books, booklets, phone books, brochures, etc.), cardboard, toner cartridges, and other recyclable commodities. For additional information contact the recycling hotline at 321-867-3305. See [Chapter 27](#) of this KNPR.

b. All recyclable commodities shall be placed in designated recycling bins located in buildings throughout KSC.

c. When the recycling bin is roughly three-quarters full, employees shall submit a recycling request via the [Sustainable Tracking Tool for Automated Recycling \(STAR\)](#) Web site, and the bins will then be serviced by the recycling contractor.

d. The following items shall not be placed in a recycling bin: wet garbage, carbon paper, document protectors, binders, and any electronic equipment.

e. All debris shall be emptied from cardboard boxes before recycling. Break down (flatten) boxes only if this can be done safely. Non-recyclable cardboard includes:

- (1) Chemically contaminated cardboard
- (2) Cardboard with food or beverage residue

f. Under no circumstances shall recyclable material be deposited in trash containers.

g. The Sensitive But Unclassified (SBU) paper shall be placed in SBU designated, locked bins. Bins must be scheduled for servicing by using the [STAR Web site](#).

h. Alkaline batteries can be recycled by placing them in designated bins located in the Central Campus Headquarters Building, Space Station Processing Facility, Neil Armstrong Operations and Checkout Building, and Operations Support Buildings 1 and 2 or by taking them to the DYCOH site.

i. PCBs have been regularly detected in various building materials across KSC and CCSFS. Such construction and demolition debris requires sampling before it can be recycled or sold through KSC's Property Disposal Office at the Ransom Road RRMF or transferred to the construction contractor as a project off-set.

j. PMs shall maximize recycling and divert solid waste from disposal when cost-effective. Cost evaluations shall be retained with the project file for audit purposes. (See [Chapter 19](#) for further information on the proper handling, storage, and disposal of materials containing PCB).

26.3.5 Use of Recycling Funds

- a. [Public Law 103-329](#) authorizes Federal agencies to receive and use funds resulting from the sale of recycled materials for additional recycling, pollution prevention, or environmental management programs. All proceeds from recycling shall be deposited into a designated recycling account.
- b. A formal request for recycling funding of a new project must be IAW [KDP-KSC-P-1449, Use of Recycling Funds for Center-wide Projects.](#)

26.4 Diverted Aggregate Reclamation and Collection Yard

26.4.1 The DARC Y is a cleared, ten acre parcel located west of the existing permitted Class III, C and D landfill. The DARC Y provides a temporary storage and processing area for reuse of waste concrete and other aggregate-based materials such as river rock, limestone, and gravel.

26.4.2 Material to be brought to the DARC Y shall be segregated at the source (project location) and be free of other construction debris and excess soils. Diverted concrete materials may contain rebar, wire fabric, or other metallic material. Any external metallic material must not protrude more than four inches from the concrete surface.

26.4.3 Upon entering the landfill, all vehicles shall proceed to the scale house for weigh-in with the scale house attendant.

26.4.4 The landfill operator shall retain records of material deliveries to the DARC Y.

26.4.5 Records of material removed from the DARC Y for reuse shall be maintained on a yearly basis by the scale house attendant and the PM removing the material. These records will be available to the NASA EMB.

26.4.6 Acceptability Criteria

- a. Clean, unstained, and unpainted concrete can be accepted at the DARC Y without conducting any sampling. If the concrete has paint or coating on it, further evaluation is required to determine acceptability at the DARC Y.
- b. Painted or coated concrete shall be accepted at the DARC Y only if one of the conditions listed below is met; otherwise, the painted or coated concrete must be disposed of in the KSC landfill as regular construction and demolition debris.
 - (1) The paint or coating is sampled to determine if the total PCBs and total metals (this is not the same as the Toxicity Characteristic Leaching Procedure [TCLP] testing) are below the State of Florida Residential SCTL. The most likely heavy metals of concern found in KSC paints and coatings are lead, chromium, and cadmium. The current State of Florida Residential SCTL are listed below:
 - (a) Total PCB = 0.5 mg per kg
 - (b) Total Lead = 400 mg per kg
 - (c) Total Chromium = 210 mg per kg

(d) Total Cadmium = 82 mg per kg

(1) Documentation is provided (e.g., SDS) that all layers of all paints and coatings on the concrete do not contain any PCBs or heavy metals.

(2) The paint or coating is sampled for total PCB, the concentration is less than 50 mg for every kg, and all of the paint or coating is removed from the concrete prior to placement in the DARC Y.

NOTE: Concrete with total PCB concentrations greater than 50 mg per kg in the paint or coating shall be disposed of in the KSC landfill as regular construction and demolition debris.

(a) The removal process shall be coordinated through and approved by the NASA EAB.

(b) All of the removed paint or coating shall be containerized and disposed of through the KSC WMO IAW requirements in [Chapter 13](#) and [Chapter 17](#) of this KNPR.

26.4.7 No oil-stained concrete is accepted at the DARC Y. When feasible, stained concrete must be segregated from clean concrete. Because of the potential to contain PCB, all removed concrete associated with oil-containing electrical equipment shall be disposed of through the KSC WMO as a regulated PCB waste.

26.4.8 No contractor is allowed to conduct any land disturbing activities at the DARC Y without prior written consent of the NASA EMB. Land disturbing activities include, but are not limited to, scraping of soil, removal of soil for offsite activities, and digging. Land disturbance may require that environmental permits be secured and erosion and sediment controls implemented prior to conducting these activities. Failure to properly notify the NASA EMB or to secure a permit will have a negative impact on actions and shall be the responsibility of the contractor.

26.5 Green Purchasing and Sustainable Acquisition

26.5.1 Federal agencies and their contractors are required to purchase products made from recycled or recovered materials and other environmentally preferable products whenever possible (Ref. [FAR 23.1](#) and [NPR 8530.1](#)). The [Green Compilation Tool](#) Web site helps users identify green products and services from a number of Federally-approved databases.

26.5.2 NASA's EMB shall facilitate awareness across the Center, assess performance, and compile Center-wide sustainable acquisition information for annual reporting requirements.

26.5.3 All NASA and contractor organizations shall submit their annual green purchasing fiscal year (FY) data into NETS before the Agency due date, and include the following information:

a. The total dollar amount of each item purchased during the previous FY.

b. The total dollar amount of each item purchased during the previous FY that contained at least the minimum recommended percentages of recycled content or bio-based content.

c. The total dollar amount of each item purchased during the previous FY that contained recycled content or bio-based content less than the minimum recommended percentages of recycled content or bio-based content.

d. The number of waivers and the name of the item in each waiver submitted to the NASA EMB during the previous FY.

e. The total dollar amount for each waived item purchased during the previous FY.

f. A narrative explanation of constraints for purchasing each item that did not meet green purchasing content requirements during the previous FY.

26.5.4 A waiver is required when a needed item is found in the Green Compilation Tool and not procured (see [Section 26.5.1](#)).

a. Waivers shall be submitted to the NASA EMB Chief and documented within the contract file by the Contracting Officer, showing the exception being used and rationale for using the exception.

b. Waivers must be prepared with [KSC Form 28-825](#) by following the process outlined in [KDP-KSC-P-8530](#). An allowable exception is available if any of the following conditions exist:

(1) Product or service cannot be acquired competitively within a reasonable performance schedule.

(2) Product or service cannot be acquired that meets reasonable performance requirements.

(3) Product or service cannot be acquired at a reasonable price.

(4) An exception is provided by statute, such as the exception to procuring ENERGY STAR or Federal Energy Management Program-designated products under [42 USC 8259b\(b\)\(2\)](#).

c. The price shall be deemed unreasonable when the total life cycle costs are significantly higher for the sustainable product or service versus the non-sustainable product or service. Life cycle costs are determined by combining the initial costs of a product or service with any additional costs or revenues generated from that product or service during its entire life.

CHAPTER 27. KENNEDY SPACE CENTER ENVIRONMENTAL REQUIREMENTS FOR RECLAMATION, SALVAGE, AND RESALE

27.1 Reclamation and Salvage

This Chapter sets forth the Center's environmental requirements regarding reclamation, salvage, and resale of Center materials through the KSC RRMF located at Ransom Road. Categories of materials covered by this Chapter include, but are not limited to:

- a. Oil-filled equipment
- b. Lead acid batteries
- c. Scrap metal
- d. Electronic equipment
- e. Heavy or movable equipment
- f. Compressed gas cylinders
- g. Severed flex hoses

27.2 Responsibility

27.2.1 All NASA and contractor organizations responsible for environmental contamination at the RRMF occurring as a result of failure to follow the requirements in this Chapter shall be held liable for all cleanup and remediation costs associated with such contamination.

27.2.2 All NASA and contractor organizations are responsible for the testing identified herein and shall submit results when transferring items to the RRMF for disposition.

27.3 Kennedy Space Center Reutilization, Recycling, and Marketing Facility

27.3.1 Safe salvage and reclamation operations at the RRMF are achieved by using good environmental management practices, preventing spills and releases, and properly identifying, describing, and documenting materials before they are transferred to the RRMF.

27.3.2 The RRMF shall accept materials only if they meet the following criteria:

- a. No leakage of any type of fluid from equipment or containers.
- b. No visible indication of old spills or releases on outside of equipment or containers that could be washed off from rainfall.
- c. Drained of all fluids, unless determined to be acceptable by the RRMF and environmental personnel for the purpose of the item resale to maximize the Government's potential proceeds.
- d. The property has been excessed per [KDP-KSC-P-3716](#).

27.3.3 Sampling analysis for metals (totals or TCLP) is not necessary for items to be recycled.

27.3.4 Paints and coatings manufactured prior to 1979 may contain PCB. PCB-containing paints and coatings have been found across KSC and in NASA-operated facilities at CCSFS. All equipment being offered for sale or as scrap must meet the following requirements. (See [Chapter 19](#) for more guidance and requirements for managing and disposing of PCB.)

- a. If the total PCB concentration in the paint or coating is greater than or equal to 50 mg per kg, the entire item is a regulated PCB waste and cannot be transferred to, sold, or recycled through the KSC RRMF.
- b. Oil inside electrical and mechanical equipment may contain PCB and must be sampled to determine the PCB concentration.
- c. Oil-containing equipment where the PCB concentrations in both the oil and paint are less than 50 mg per kg can be excessed through the RRMF. The oil shall be removed from the equipment and sample results provided to the RRMF.
- d. Any equipment which is found to be leaking during the initial inspection of the delivery to RRMF shall be reported as a spill. It is the financial and environmental responsibility of the organization sending the equipment to the RRMF to ensure appropriate cleanup and disposition of the equipment and any other contamination it caused.

27.3.5 Liquid-containing items delivered to the RRMF with the intent of resale, but at some point re-designated from sale to scrap metal, shall be properly drained into impermeable containment sufficient to collect and contain 100 percent of all liquids in the equipment.

- a. RRMF personnel shall submit a work order to drain properly.
- b. RRMF personnel shall manage these items under the requirements for scrap metal.

27.3.6 Once material has been accepted by the RRMF personnel, it is their responsibility to ensure that the material is stored in a manner that prevents environmental contamination.

27.3.7 [Table B](#) summarizes the requirements for some of the most common materials sent to the RRMF. This listing summarizes the major environmental requirements for delivery and acceptance of materials to the RRMF as well as general storage requirements of the materials while at the RRMF.

Table B: Materials Allowed at RRMF

Oil-Filled Equipment	<p>a. Oil-filled equipment shall be drained of free-flowing liquids (unless sampling verifies that oil is PCB-free) and the exterior visually free of oil or other contamination.</p> <p>b. Items that previously contained dielectric fluid shall be accompanied by a copy of analytical results taken within the past 6 months documenting the fluid did not exceed 50 ppm for PCB.</p> <p>c. Once at the RRMF, this equipment shall be stored on an impervious surface with rain protection.</p>
Batteries: Lead-Acid and Silver-Zinc	<p>a. Lead-acid and silver-zinc batteries may be brought to the RRMF undrained, but shall not be leaking.</p> <p>b. The batteries shall be secured to pallets or containerized and protected against short circuits.</p> <p>c. Batteries shall not be stacked in any way that puts weight on the battery terminals.</p> <p>d. Batteries shall be stored in a segregated location inside shelter on an impervious surface with rain protection.</p> <p>e. The batteries shall be identified as lead-acid or silver-zinc and be accompanied by SDS and KSC Form 7-49, or equivalent.</p>
Carbon Steel Drums	<p>a. Carbon steel drums shall be brought to the RRMF emptied of all free-flowing liquid, crushed and palletized.</p> <p>b. Crushed drums shall be stored on pallets on impervious surface with rain protection.</p> <p>c. These drums shall be accompanied by PWQ and TRP and KSC Form 7-49 or equivalent.</p>
Stainless Steel Drums	<p>a. Stainless steel drums must be triple rinsed prior to excessing. This rinsing effort must meet the standards in 40 CFR 261.7. The drums will be sold or excessed in place.</p> <p>b. Once the triple rinse is complete, stencil the words, "TRIPLE RINSED" on the side of the stainless-steel drums. The drums will remain uncrushed.</p> <p>c. Triple rinsed drums will either be sold in place or taken to RRMF for appropriate management.</p> <p>d. Keep a copy of the work order directing the triple rinse at the facility where the decontamination effort took place.</p> <p>e. Retain a signed copy of the completed work order with the stainless-steel drum.</p>

Equipment Containing ODS (e.g., Freon) – <i>Unusable Equipment</i>	<p>a. Equipment containing ODS (e.g., Freon) that is no longer usable may be brought to the RRMF but shall be properly drained (recover ODS) and labeled as “Empty.”</p> <p>b. The equipment shall be accompanied by KSC Form 7-49 or equivalent.</p>
Equipment Containing ODS (e.g., Freon) – <i>Usable Equipment</i>	<p>a. Equipment containing ODS that is offered for sale as usable equipment may be brought to the RRMF. This equipment does not need to be drained of the ODS, but shall be accompanied by shop or lab certification that the equipment is not leaking and by KSC Form 7-49 or equivalent.</p> <p>b. This equipment shall be stored in an area with rain protection.</p>
Scrap Metal and Structural Steel	<p>a. Scrap metal and structural steel shall be visibly clean of all residual oils or contaminants and clearly identified in writing as intended for sale as scrap only.</p> <p>b. These materials shall be accompanied by KSC Form 7-49 or equivalent.</p>
Flex Hoses	<p>a. Flex hoses shall be decontaminated and certified as such.</p> <p>b. The hoses shall be mechanically rendered unusable (by cutting, crushing, or other means) for anything but scrap. Hoses of any size must be rendered unusable and larger hoses cut into 4’ to 6’ lengths. The hoses may then be stored with other scrap metal for sale.</p> <p>c. These materials shall be accompanied by KSC Form 7-49 or equivalent.</p>
Compressed Gas Cylinders (non-acetylene)	<p>a. Empty compressed gas cylinders (non-acetylene) shall be returned to vendors, if possible.</p> <p>b. If impossible to return to vendors, the property owners shall ensure cylinders are empty, purged of all contents (providing certification), and have been rendered incapable of holding pressure through methods such as removing the head valve, drilling a hole in the sidewall, or cutting open the cylinder to display the inner walls.</p> <p>c. These materials shall be accompanied by KSC Form 7-49 or equivalent.</p>
Acetylene Gas Cylinders	<p>a. Empty acetylene gas cylinders shall be returned to vendors, if possible. Acetylene cylinders may contain asbestos; coordinate with KSC Environmental Health before cutting or disturbing structural integrity of acetylene cylinders.</p> <p>b. A warning shall be placed on cylinders due to the high flammability of these assets.</p> <p>c. If the cylinder is found to contain asbestos, RRMF cannot recycle them and they shall be disposed of as a hazardous waste.</p> <p>d. These materials shall be accompanied by KSC Form 7-49 or equivalent.</p>
Magnetic Tapes	<p>Magnetic tapes may be brought to the RRMF and stored in an area with rain protection. These materials shall be accompanied by KSC Form 7-49 or equivalent.</p>

Electronic Equipment – <i>Unusable</i>	<p>a. Unusable electronic equipment is identified as E-waste. E-waste is a generic term for a variety of waste containing electronic components including products used for data processing, telecommunications, or entertainment such as computers, monitors, TV sets, mobile phones, PDAs, and electronic equipment used in industrial settings.</p> <p>b. All hazardous materials shall be removed (e.g., mercury, PCB, etc.) and certified as being clean for sale as scrap.</p> <p>c. The equipment shall be identified as intended for sale as scrap and accompanied by KSC Form 7-49 or equivalent.</p> <p>d. All unusable electronic equipment shall be turned over to Unicor, a certified R2 recycler, IAW the NASA Agency MOA.</p>
Electronic Equipment – <i>Usable</i>	<p>a. Electronic equipment that is intended for resale as usable equipment shall be stored in an area with rain protection.</p> <p>b. The equipment shall be accompanied by KSC Form 7-49 or equivalent.</p>
Precious Metals	<p>Precious metals may be brought to the RRMF and stored in an area with rain protection. These materials shall be accompanied by KSC Form 7-49 or equivalent.</p>
Heavy or Movable Equipment (e.g., forklifts, lawn mowers, etc.) - <i>unusable</i>	<p>a. Unusable heavy or movable equipment (e.g., forklifts, lawn mowers, etc.) may be brought to the RRMF drained of all fluids (fuel, hydraulic oil, etc.) and the exterior shall be visibly clean of all oil or contaminants.</p> <p>b. The equipment shall be stored on an impervious surface with rain protection.</p> <p>c. The equipment shall be identified as intended for sale as scrap and accompanied by KSC Form 7-49 or equivalent.</p>
Heavy or Movable Equipment – <i>usable</i>	<p>a. Heavy or movable equipment for sale as usable equipment shall be inspected and certified to ensure all fluid lines and reservoirs are intact and not leaking.</p> <p>b. The exterior of all equipment shall be visibly clean of all oil or contaminants.</p> <p>c. The equipment shall be stored on an impervious surface with rain protection and segregated from scrap materials.</p> <p>d. The equipment shall be accompanied by KSC Form 7-49 or equivalent.</p> <p>e. Once accepted, RRMF personnel shall conduct routine inspections for leaks, promptly clean up any contamination from leaks, and store equipment in secondary containment until leak is fixed.</p>
Hypergolic Equipment	<p>a. The equipment shall be drained of all fluids.</p> <p>b. The sampling results shall be provided indicating no residual commodities.</p>

	<p>c. The soft goods shall be removed and disposed of through the appropriate waste stream.</p> <p>d. The equipment shall be stored on an impervious surface with rain protection.</p>
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27.3.8 The following materials shall not be accepted for salvage, reclamation, or resale at the RRMF:

- a. Visibly leaking equipment or containers.
- b. Spent blast media.
- c. Uncrushed drums except those clearly identified as artifacts.
- d. Treated lumber.
- e. Explosives or ordnance.
- f. Radioactive materials.
- g. Intact compressed gas cylinders and acetylene cylinders containing asbestos.
- h. Intact flex hoses.
- i. Hazardous materials to include property that contained hypergolic fuels.
- j. Biomedical wastes.
- k. Non-lead and non-silver zinc batteries such as:
 - (1) Lithium batteries managed as UW (see [Section 13.12](#)).
 - (2) Mercury batteries (managed as UW).
 - (3) Nickel-cadmium wet cell batteries containing potassium hydroxide electrolyte solution (managed as UW).
 - (4) Nickel-cadmium dry cell batteries (managed as UW).

27.4 Procedures

27.4.1 To successfully implement the requirements in this Chapter, NASA and contractor organizations shall develop and implement adequate procedures addressing inspection, transportation, and storage activities at the RRMF and other Center locations to prevent environmental contamination.

27.4.2 The organization transferring items to the RRMF for reclamation, salvage, or resale shall ensure that all materials sent to the RRMF meet the requirements of this Chapter at the time of delivery to RRMF and provide the proper documentation.

CHAPTER 28. ENERGY AND WATER MANAGEMENT

28.1 Energy Conservation

28.1.1 Achieve and maintain annual reductions in building energy use and implement energy efficiency measures that reduce costs is a requirement of the most recent sustainability-related Executive Orders.

28.1.2 Lifecycle costs should be considered for all repairs of HVAC and lighting. When the lifecycle cost of repairing the HVAC and lighting is estimated to be in excess of 10 percent of the replacement value, notify NASA EMB.

28.1.3 HVAC and Lighting Efficiency Standards: New or replacement HVAC and lighting shall meet or exceed the energy standards of the latest version of ASHRAE 90.1. Occupancy sensors must be employed to the maximum extent practical for HVAC and interior lighting. Motion sensors will also be used to the maximum extent possible for exterior lighting

28.1.4 Temperature and Energy Management Program (TEMP) goal is to provide comfortable and functional work spaces using the least amount of energy derived from the burning of fossil based fuels as possible. To help achieve this goal, the TEMP establishes temperature set points for space types, identifies temperature schedule(s) and describes the process to change a temperature schedule. This program is managed by the base supporting contractor. All KSC employees, tenants, and contractors shall adhere to the standards and requirements included with the TEMP.

28.2 Water Conservation

28.2.1 Reduce potable and non-potable water consumption is a requirement of the most recent sustainability-related Executive Orders.

28.2.2 The installation of new or operation of existing irrigation systems at KSC is not authorized unless specifically approved by the EMB . The establishment of seed and sod IAW an issued ERP from the SJRWMD or in concert with construction-related activities is allowed. For exceptions granted, the system shall be designed and operated to use the lowest quality water (non-potable) feasible, i.e. stormwater ponds, rainwater collection, O&M flushing water, or shallow wells.

28.2.3 For planned replacements or new installation of water fixtures, the fixture installed shall meet or exceed the water efficiency standard listed in the table below. In the event the planned replacement of an existing fixture with a more efficient fixture is suspected to be problematic due to insufficiently size, inadequate slope or tuberculation within the receiving wastewater line, notify NASA EMB.

Toilet (gallons per flush [gpf]) for facilities constructed prior to 1990	Toilet (gpf) for facilities constructed after 1990	Urinal (gpf)	Lavatory faucet (gallons per minute [gpm])	Kitchen Faucet (gpm)	Shower (gpm)
1.6*	1.28*	0.5**	0.5	2	1.5

* Also consider the use of dual flush valves where appropriate.

**Use 0.13 gpf when available for required model.

28.3 Kennedy Space Center Energy and Water Ten-Year Implementation Plan

28.3.1 The KSC Energy and Water Ten-Year Implementation Plan, [KSC-PLN-8570](#) supports KSC's mission by following internal and external regulations and policies and implementing energy and water efficiency processes. This includes areas such as facility planning, design, construction, operations, maintenance, procurement, logistics, and other areas affecting energy and water consumption and supply.

28.3.2 [KSC-PLN-8570](#) implements Agency requirements mandated by [NPR 8570.1](#). The plan establishes energy efficiency and water conservation practices in order to save taxpayer dollars, reduce emissions that contribute to air pollution and global climate change, and conserve precious natural resources for future generations. It also provides standards and metrics to ensure compliance with energy and water conservation mandates.

28.3.3 All KSC organizations shall comply with Federal requirements and perform day-to-day activities in an energy and water efficient manner (e.g., designing efficient equipment and facilities, buying efficient products, operating and maintaining equipment and facilities at peak efficiency, and turning off systems when not in use).

28.4 Responsibilities

28.4.1 All KSC employees, tenants and Contractors shall:

- a. Conduct day-to-day functions with good energy and water efficiency practices.
- b. Report energy and water waste from improperly operating equipment to appropriate Trouble Call Office and submit opportunities for improvement to organizational Energy Working Group (EWG) or Water Working Group (WWG) member.
- c. Ensure efficient and cost-effective utility use by applying energy and water conservation techniques to the operation and maintenance of KSC systems.
- d. Ensure that new construction and modifications are compliant with Federal and NASA energy and water conservation standards and mandates and that lifecycle costs are considered in HVAC and lighting replacement.
- e. Contribute to deliverables for NASA HQ such as budget exhibits, reports, self-assessments, spot check responses, and special data collections as required by the NASA EAB to support energy and water conservation initiatives at KSC.
- f. Ensure that non-temporary potable water irrigation systems are not in operation at KSC unless specifically approved by NASA EMB.
- g. Ensure adherence to the TEMP program.

28.4.2 The KSC Energy and Water Manager shall:

- a. Represent KSC on the NASA Energy Efficiency Panel and at NASA Energy and Water meetings.
- b. Chair the KSC EWG and WWG.

- c. Lead planning and program implementation to ensure compliance with Federal and NASA mandates and communicate progress through metrics.
- d. Ensure effective energy utility purchases.
- e. Ensure submittal to NASA HQ of deliverables such as budget exhibits, reports, self-assessments, spot check responses, and special data collections.
- f. Serve as technical contact for energy budgeting and manage special funds for energy projects such as utility rebates and Department of Energy (DOE) funding. Utility rebates are to be re-invested in energy and water conservation projects that benefit the Government.
- g. Update Energy Star® Portfolio Manager and the DOE Compliance Tracking System for Covered Goal Subject KSC facilities IAW the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings.

28.4.3 NASA KSC program and institutional organizations including supporting contractor organizations (for O&M of facilities under their responsibility) shall:

- a. Participate in the EWG and WWG.
- b. Plan and implement an energy and water management program that ensures compliance with Federal and NASA mandates consistent with the KSC Energy and Water Program and communicate progress through metrics.
- c. Contribute to deliverables to NASA HQ such as budget exhibits, reports, self-assessments, spot-check responses, and special data collections via NETS and otherwise.
- d. Forecast energy and water consumption and cost for assigned facilities.

28.4.4 KSC facility and equipment design organizations shall ensure new construction and modifications are compliant with Federal and NASA energy and water mandates.

28.4.5 Spaceport Integration and Services' Logistics Branch shall coordinate KSC's response to transportation mandates with the General Services Administration.

APPENDIX A. ACRONYMS

ACBM	Asbestos-Containing Building Material
ACHP	Advisory Council on Historic Preservation
ACWM	Asbestos-Containing Waste Material
ADL	Acceptable Decontamination Limit
AF	Air Force
ASD	Accumulation Start Date
AST	Aboveground Storage Tank
BCNRMD	Brevard County Natural Resources Management Department
BMP	Best Management Practice
BO	Biological Opinion
BOSS	Base Operations and Support Services Contract
CAA	Clean Air Act
CATEX	Categorically Excluded
CCSFS	Cape Canaveral Space Force Station
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COR	Contracting Officer Representative
CRM	Cultural Resources Manager
CWA	Clean Water Act
DARCY	Diverted Aggregate Reclamation and Collection Yard
DOD	Department of Defense
DOE	Department of Energy
DOI	Department of the Interior
DOT	Department of Transportation
DYCOH	Drop Your Chemicals Off Here
EA	Environmental Assessment
EAB	Environmental Assurance Branch
EC	Environmental Checklist
EHS	Extremely Hazardous Substance
EIS	Environmental Impact Statement
EMB	Environmental Management Branch
EMS	Environmental Management System
EO	Executive Order
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ERD	Environmental Resources Document
ERP	Environmental Resource Permit
ESA	Endangered Species Act
ESAM	Environmental Sampling, Analysis, and Monitoring
ESC	Environmental Support Contract

EU	Emission Units
E-waste	Electronic Equipment Waste
EWG	Energy Working Group
FAC	Florida Administrative Code
FAR	Federal Acquisition Regulations
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FL	Florida
FM	Facility Manager
FS	Florida Statutes
FWS	Fish and Wildlife Service
FY	Fiscal Year
gpf	Gallons Per Flush
gpm	Gallons Per Minute
HQ	Headquarters
HVAC	Heating, Ventilation, and Air Conditioning
HWDIP	Hazardous Waste Determination in Progress
IAW	In Accordance With
ICRMP	Integrated Cultural Resource Management Plan
IOZ	Inorganic Zinc
KCA	Kennedy Customer Agreement
KDP	Kennedy Documented Process
KEMCON	Kennedy Environmental and Medical Contract
kg	Kilogram
KNPD	Kennedy NASA Policy Directive
KNPR	Kennedy NASA Procedural Requirements
KSC	Kennedy Space Center
LDR	Land Disposal Restriction
LED	Light Emitting Diode
LEPC	Local Emergency Planning Committee
LOM	Lighting Operations Manual
LOSC	Launch Operations Support Contract
mg	Milligram
MINWR	Merritt Island National Wildlife Refuge
MOA	Memorandum of Agreement
MVAC	Motor Vehicle Air Conditioner
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NESHAP	National Emission Standard Hazardous Air Pollutants
NETS	NASA Environmental Tracking System
NEW	Net Explosive Weight
NHL	National Historic Landmark

NHPA	National Historic Preservation Act
nm	Nanometers
NPD	NASA Policy Directive
NPDES	National Pollutant Discharge Elimination System
NPR	NASA Procedural Requirements
NPS	National Park Service
NRACM	Non-Regulated Asbestos Containing Materials
NRHP	National Register of Historic Places
O&M	Operations and Maintenance
ODS	Ozone Depleting Substance
OR	Organizational Representative
OSF	Ordnance Storage Facility
OSHA	Occupational Safety and Health Administration
OSTDS	Onsite Sewage Treatment and Disposal Systems
PSFB	Patrick Space Force Base
PCB	Polychlorinated Biphenyls
PCW	Petroleum Contact Water
PE	Professional Engineer
pH	Potential of Hydrogen
PIR	Pollution Incident Report
PM	Project Manager
PPE	Personal Protective Equipment
ppm	Parts Per Million
PRL	Potential Release Location
psi	Pounds Per Square Inch
PTE	Potential to Emit
PWQ	Process Waste Questionnaire
RACM	Regulated Asbestos-Containing Material
RAI	Requests for Additional Information
RCRA	Resource Conservation and Recovery Act
REC	Record of Environmental Consideration
RMP	Risk Management Plan
RRMF	Reutilization, Recycling, and Marketing Facility
SAA	Satellite Accumulation Area
SBU	Sensitive But Unclassified
SCTL	Soil Cleanup Target Level
SDS	Safety Data Sheets
SEMS	Sustainable Environment Management System
SERC	State Emergency Response Commission
SF	Space Force
SHPO	State Historic Preservation Office
SJRWMD	St. Johns River Water Management District
SLD 45	Space Launch Delta 45

SOP	Standard Operating Procedure
SPCC	Spill Prevention, Control, and Countermeasures
STAR	Sustainable Tracking Tool for Automated Recycling
SWMU	Solid Waste Management Unit
SWPPP	Stormwater Pollution Prevention Plan
TCLP	Toxicity Characteristic Leaching Procedure
TEMP	Temperature and Energy Management Program
TPQ	Threshold Planning Quantity
TRI	Toxic Release Inventory
TRP	Technical Response Package
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage, and Disposal Facility
U.S.	United States
USACE	United States Army Corp of Engineers
USC	United States Code
UST	Underground Storage Tank
UW	Universal Waste
VEO	Visual Emission Observation
WMO	Waste Management Office
WMS	Waste Management System
WSR	Waste Support Request
WWG	Water Working Group

APPENDIX B. REFERENCE DOCUMENTS

- B.1 Appendix I of the [Applicant's Handbook, Consumptive Uses of Water](#)
- B.2 [The Secretary of the Interior's Standards and Guidelines for Federal Agency Historic Preservation Programs](#)
- B.3 FDEP, [Development and Evaluation of Numerical Sediment Quality Assessment Guidelines for Florida Inland Water](#), January, 2003
- B.4 FDEP, [Approach to the Assessment of Sediment Quality in Florida Coastal Waters](#), November, 1994
- B.5 EPA, [Guidance for the EPA Halon Emission Reduction Rule](#), February, 2001